



**ATLAS**  
**CÆLESTIS**  
 Containing the Systems  
 and Theories of the Planets  
 the Constellations of  
 the Starrs.  
 and other Phenomina's of the Heavens.  
 Sold by Jer. Seller & Cha. Price at y<sup>e</sup> Hermitage  
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A brief Description of the several  
Systems, Theories, Schemes,  
and Tables contained in this  
'Book.

Also, a Discourse of the Celestial Bo-  
dies, the Sun and Moon, and the  
rest of the Planets, Fiery-Meteors,  
Blazing-Stars, and other Pheno-  
mena's in the Heavens.

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C H A P. I.

*A Description of the System of Ptolomy.*

**T**His Systeme of the Heavens, and the Motions  
of the Planets, is of greater antiquity than  
the other Palanetary Systems, either by *Co-*  
*pernicus*, or *Tycho*, and is supposed by some  
to be more consentaneous to the Letter of the Scrip-  
ture than the rest. It was first invented by one  
*Claudius Ptolomeus*, a Native of *Pelussium*, in his  
A time

Time the Prince of *Astronomers, Astrologers, and Geographers*, who lived *Anno Christi 135*, and wrote several Books on these Subjects.

This Systeme supposeth the Earth to be fixed as the Center of the World, and that all the Celestial-Bodies move round the same, both in their Diurnal and Annual Revolutions.

The World is supposed to be divided principally in two parts, Elemental and Celestial: The Elemental admits of four divisions.

The first is the *Earth*.

The second is the *Water*, both which makes one intire Body or Globe, whereon we dwell.

The third is the *Air*, encompassing the Earth.

And the fourth is the *Fire*, which according to the opinion of ancient Philosophers, is contained in that space between the Air and the Sphere of the Moon.

These four Elements are subject to a continual change and alteration of one into another, according to the Proverb, *Omnia sublunaria mutabilia*.

The Celestial part is that which is without these elementary parts, void of all changes, and is by the ancient Astronomers divided into ten Parts or Heavens.

The first of which, next to the Region of Fire, is the Heaven or Orb of the *Moon*.

The second of *Mercury*.

The third of *Venus*.

The fourth of the *Sun*.

The fifth of *Mars*.

The sixth of *Jupiter*:

The seventh of *Saturn*.

The eighth of the *Fixed-Stars*.

The ninth is called the *Cristalline-Heaven*.

The tenth the *Primum Mobile*.

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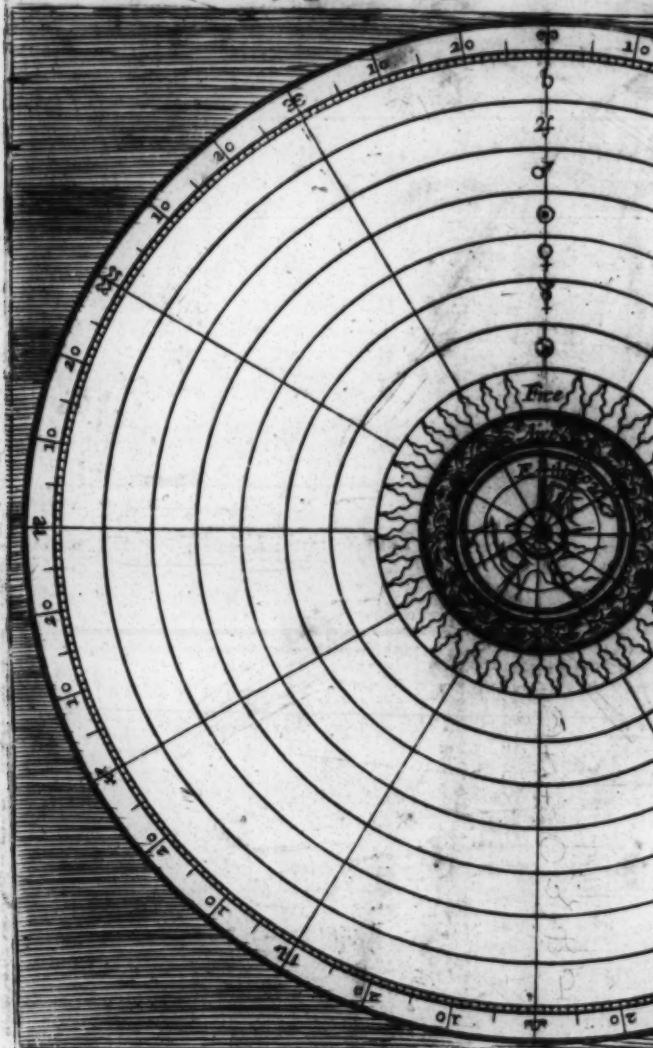
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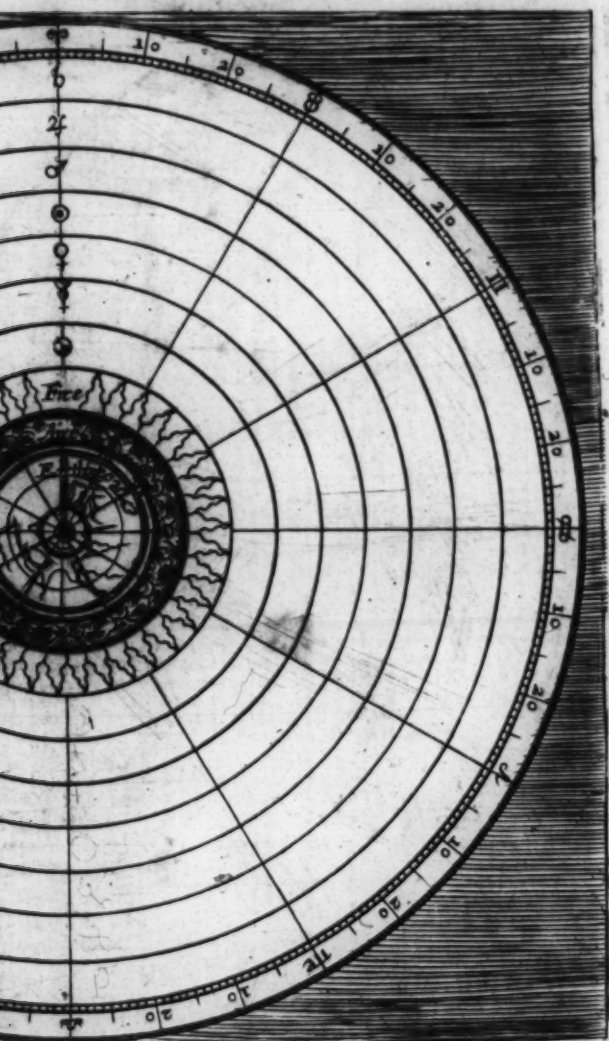
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The magnitude of these Heavens is known by their Courses, which those great Bodies within them makes, round the Poles of the *Zodiack*.

The *Moon* runneth through the Heavens, by her natural course from West to East in 27 Days, and 8 Hours.

*Mercury* in 88 Days.

*Venus* in 225 Days.

And the *Sun* in a Year, or 365 Days and 6 Hours:

*Mars* in two Years.

*Jupiter* in 12 Years.

*Saturn* in 30 Years.

The eighth Heaven perfects its course according to the affirmation of *Tycho Brahe*, in 25400 Years.

These Heavens are turned round about upon the Axis of the World by the tenth Heaven, which is the *Primum Mobile*, or first Mover, by which motion is caused Day and Night, and the daily rising and setting of the Heavenly Lights.

### *Of the Copernican System.*

THIS System was contrived by one *Nicholas Copernicus*, a Native of *Thorne* in *Prussia*, a Canon of the Church of *Fräwenburgh*, the Cathedral of *Wamerlands*, Scholar to *Dominicus Maria*, of *Ferrara*, to whom he was Assistant in making his Astronomical Observations at *Bologna*, and Professor of the Mathematicks at *Rome*; and had the happiness to frame this Hypothesis, which hath the general approbation of the most Learned Astronomers and Mathematicians in *Christendom*. He lived about the Year *Anno Christi* 1536, whose System and Hypothesis is thus framed,



1. That the Sun is placed in the midst of the World in or about the Center of the Sphere of the fixed Stars, and hath no Circular motion, but Centric only.

2. The Primary Planets are each of them in their proper Systems moved about the Sun, and do accomplish their Periodical Revolutions most exactly in their determinate and appointed times.

3. That the Earth is one of the Planets, and with her Annual motion about the Sun, describeth her Orb in the middle, between the Orbs of *Mars* and *Venus*.

4. That the secondary Planets are ordinarily moved about the primary Planets, respecting their Bodies for their common Nodes or Centers.

5. That the secondary Planet the Moon is moved about the Earth as her Center, where by reason of the Annual motion of the Earth she hath not only relation to the Earth, but by consequence to the Sun, as the other Planets have.

6. That as the primary Planet the Earth, is invested with the Sphere of the Moon, so are some (if not all) the other primary Planets, who have in like manner their Moons or Concomitants encompassing them: As *Jupiter* his Satellities, or Circumjovials, and *Saturn* his Ring. With some other Stars lately observed by some of our vigilant and accurate Astronomers, both in *England* and elsewhere.

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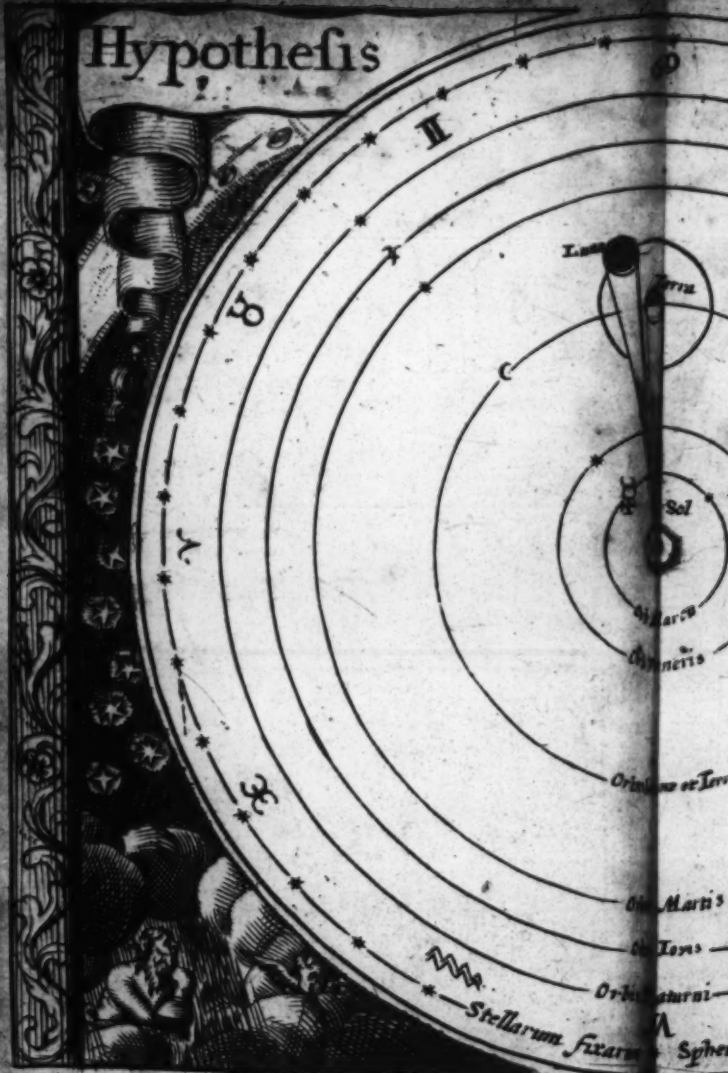


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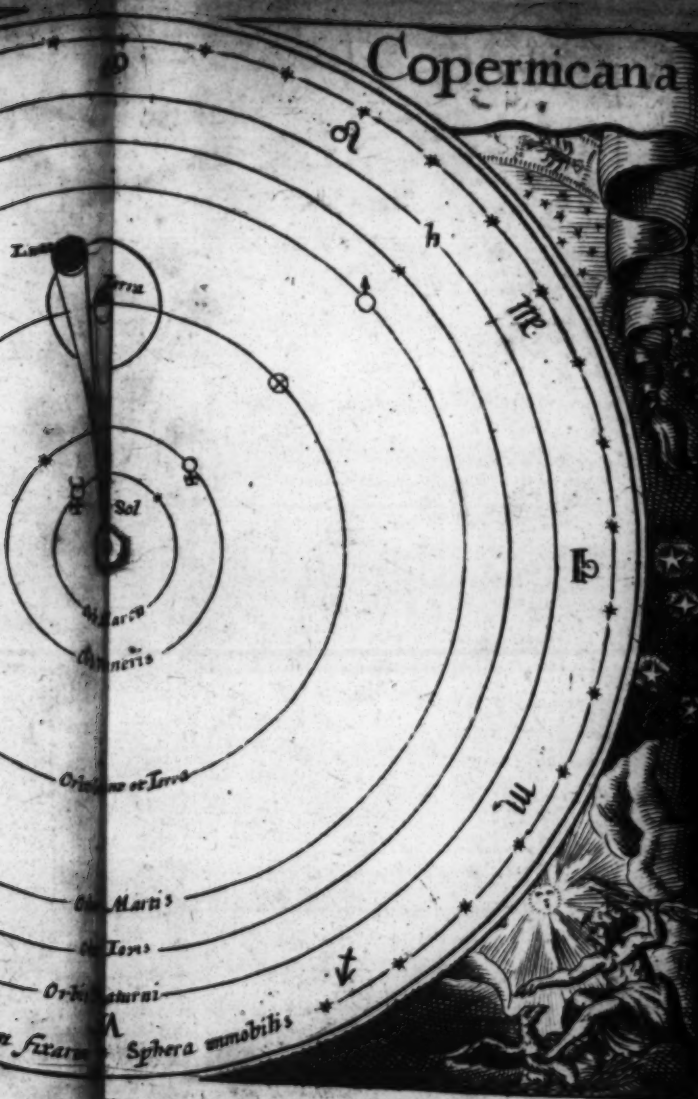




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*The order and motion of the Planets in the Copernican System; wherein is shewed the proportion of the Planetary Orbs, according to the latest and most approved Experiments of Learned Astronomers, with some remarkable Observations of the most eminent Phenomena's in the Planetary motions happening therein.*

### *Of the Sun.*

THE Sun who is *Fons lucis, oculus & anima Mundi*, the Fountain of pure Light, the Eye and Soul of the World, is placed in the middle and center of the Planetary Systems, and is far greater than any of the Planets that move about him.

He performs a revolution upon his proper Axis, in 26 Days, or thereabouts, as Telescope-Observations testify by several remarkable spots that appear in his Body, by virtue whereof (saith the Learned *Kepler*) all the Planets are carried about the Sun in their severall Orbs, and seems to be forced about by the Central motions of that great Body in the middle of their Vortex.

And hence it is, that according to the diversity and appearance of his rising and setting, and obliquation, he divideth the Seasons of the Year, and causeth an interchangeable course and vicissitude of Day and Night.

### *Of Mercury.*

The first primary Planet above the Sun is *Mercury*,  
who

who performs his course in his Elipsis, in 88 Days.

His proper Diurnal motion is 4 Deg. 5 Min. 12 Seconds, the Circuit of his Sphere is 12059773 Miles; so that he wheels in a Day 137040 Miles, and in an Hour 5710 Miles, and in a Min. 91 Miles.

The Body of *Mercury* is less than the Earth 3000 times, his greatest elongation from the Sun in respect of the Earths position is sometimes but 17 Deg. and never fully 19 Deg. so that he is seldom seen of us.

### *Of Venus.*

Next above *Mercury* is the Orb and glittering Star of *Venus*, who maketh her Periodical Revolution in her Elipsis about the Body of the Sun, in 224 Days.

It is from the Sun to the Sphere of *Venus* 363610 Miles; hence the Circuit of her Sphere is 2285591 Miles.

Her mean Diurnal motion is 1 Deg. 36 Min. Seconds; so that she moveth in a Day 101712 Miles in an an Hour 4238 Miles, and in a Min. 70 Miles. She is lesser than the Earth 147 times, and yet in respect of her vicinity to the Earth ( in the lower part of her Orb ) she appears much brighter than any Star in the whole Firmament, the Sun and Moon excepted, insomuch that she hath been often seen in the day time, as at the Birth of His Majesty K. *Charles* the 1. When she is a morning Star, rising before the Sun, she is called *Lucifer*, but when an evening Star, *Vesper*.

Her greatest elongation from the Sun ( as it is beheld from the Earth ) is but 45 Deg. and never 48 Deg.

### *Of the Earth.*

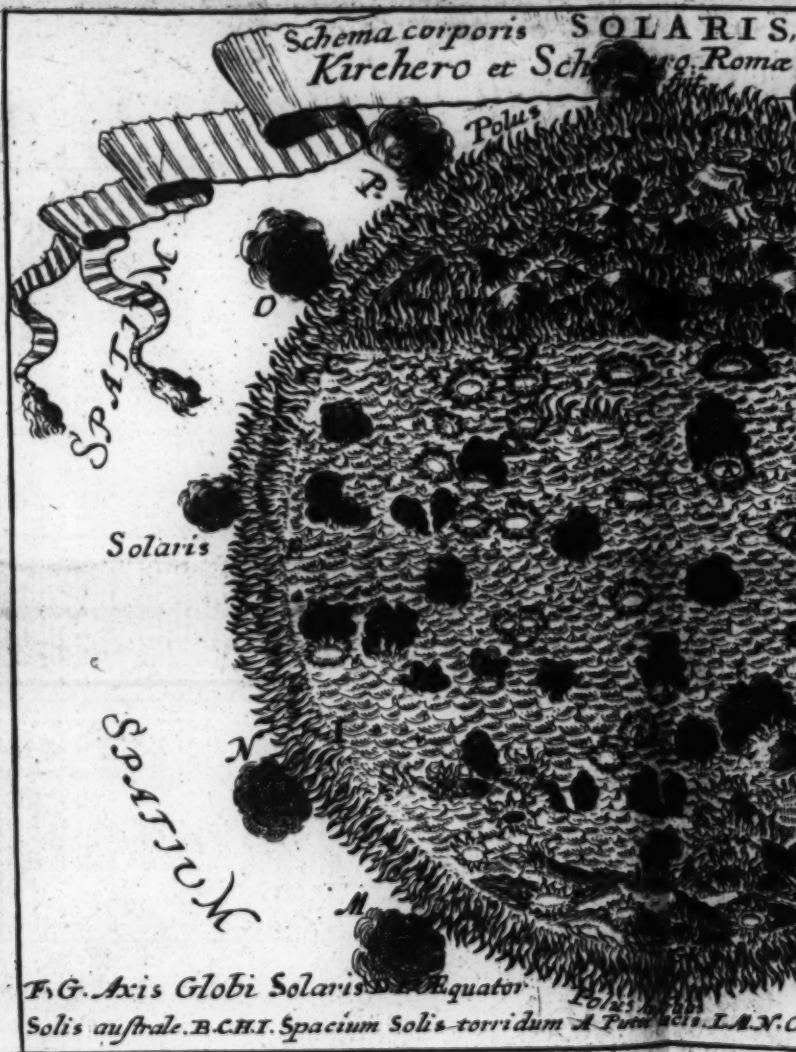
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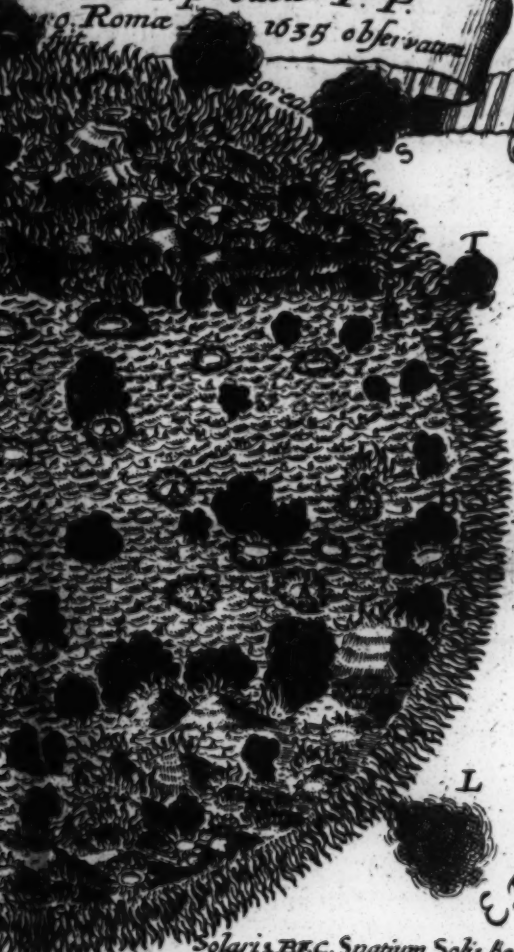
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According to the System of *Copernicus* ) being plac'd  
between the Orbs of *Mars* and *Venus*, accomplisheth  
Revolution in 365 Days, 5 Hours, and 59 Min.  
It is from the Sun to the Body of the Earth 5021896  
Miles, the Circuit of her Sphere is 31560207 Miles,  
Diurnal motion 39 Min. 8 Seconds.

Therefore the Center of the Earth is transferr'd in  
a Day 86418 Miles, in an hour 5600 Miles, and in a  
Min. 60 Miles.

The Body of the Earth is less than the Earth 333  
times, and greater than the Moon 45 times. A De-  
gree of a great Circle upon the Earths Superficies is  
commonly reputed 60 Miles, but by Mr. *Norwood's*  
Experiment is found to be 69 Miles.

And according to the first computation, the Dia-  
meter of the Earth is 6872 miles, its Semidiameter  
36 miles.

The circuit of compass of the Earth and Water con-  
taineth 21600 Miles.

In the Superficies of the Earth is contained  
8490906 Square Miles.

The whole crassitude or Body of the Earth and  
waters containeth 510131305785 Cubical Miles.

### *Of Mars.*

Next above the Earth is the Planet *Mars*, who per-  
forms his Revolution about the Sun in one Year,  
11 Days, 22 Hours, and 20 Min. It is from the  
Sun to the Body of *Mars* 7635292 Miles.

The Circuit of the Sphere of *Mars*, is 47993264  
Miles, and his Diurnal motion 31 Min. 27 Seconds;  
that he wheeleth in a Day 69842 Miles, in an Hour  
110 Miles, and in a Min. 48 Miles and a half.

The Body of *Mars* is less than the Earth 146 times,  
*Mars,*



*Mars, Jupiter, and Saturn* ( contrary to the inferior Planets ) being placed without the Perimeter of Earths Orb, are sometimes in Conjunction with Sun, and sometimes in Quadrature and Opposition which cannot be in *Venus and Mercury*, in respect their Orbs are included within the Earths Ellipsis.

### Of Jupiter.

Next above *Mars* is *Jupiter*, who runs his Course in 11 Egyptian Years, 315 Days, 14 Hours, 30 Min.

It is from the Sun to *Jupiter* 26179152 Miles. Circuit of the Sphere of *Jupiter* is 164554670 Miles. and his Diurnal motion about the Sun is 4 Min.

Hence he wheeleth every Day 17995 Miles, every Hour 1583 Miles, and every Min. 26 Miles. less than the Earth one time.

About his Body ( respecting it as their Centre ) move four small bright Stars, call'd the Satellites or Circum-Jovials, who continually move round his Body, and are seen only by a good Telescope.

### Of Saturn.

*Saturn* is the highest Planet in the Planetary System and slowest in motion, insomuch that he performs but one Revolution about the Sun in 29 Egyptian Years, 162 Days, 1 Hour, 58 Min.

It is from the Sun to *Saturn* 47833575 Miles. Circuit of his Sphere is 300668192 Miles. His peridaily motion is 2 Min. 3 Seconds.

Therefore he wheeleth in a Day 15959 Miles, an Hour 1498 Miles, and in a Min. 25 Miles.

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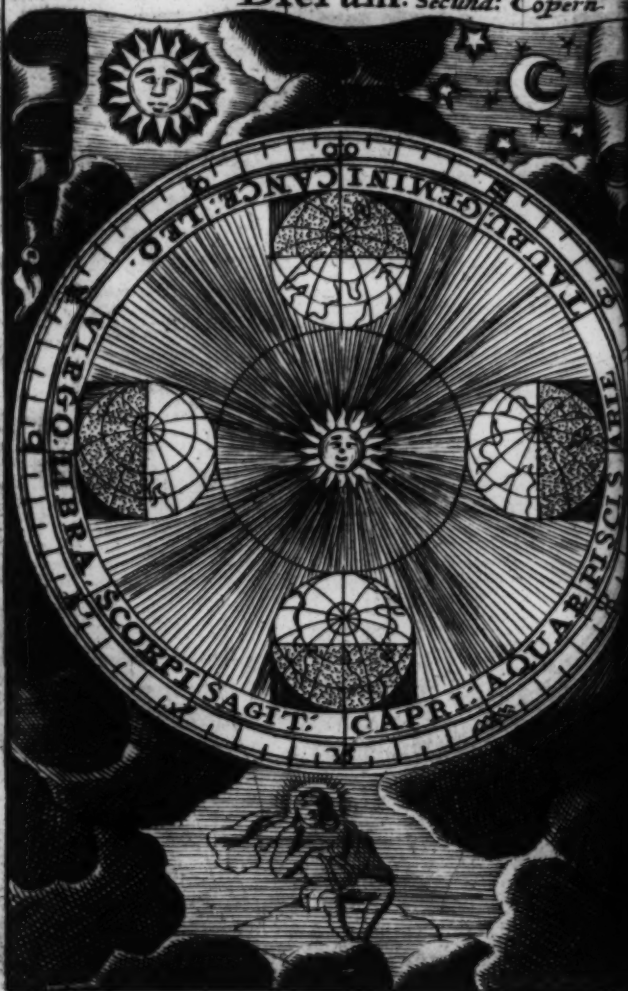
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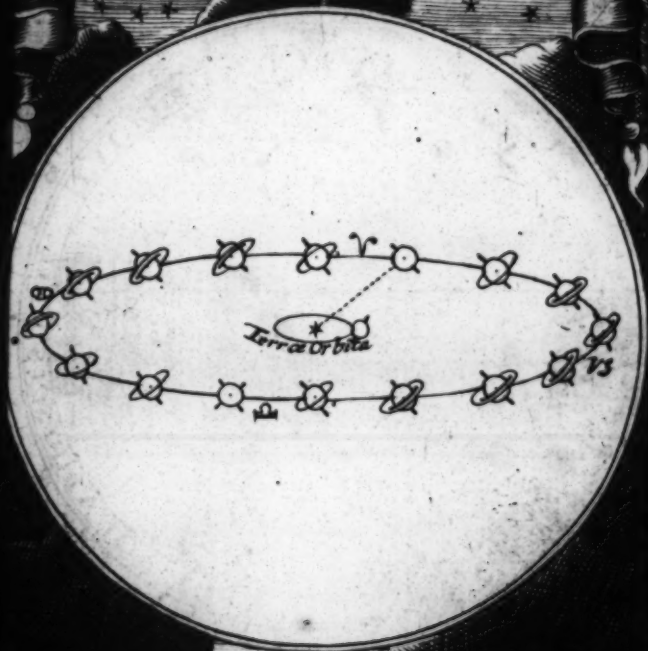
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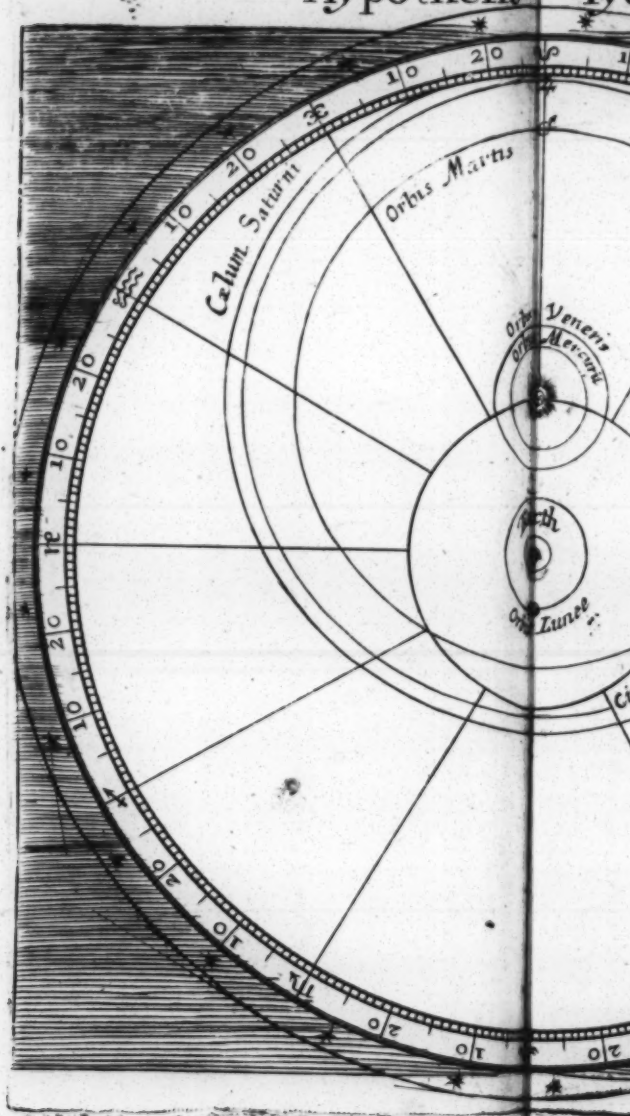
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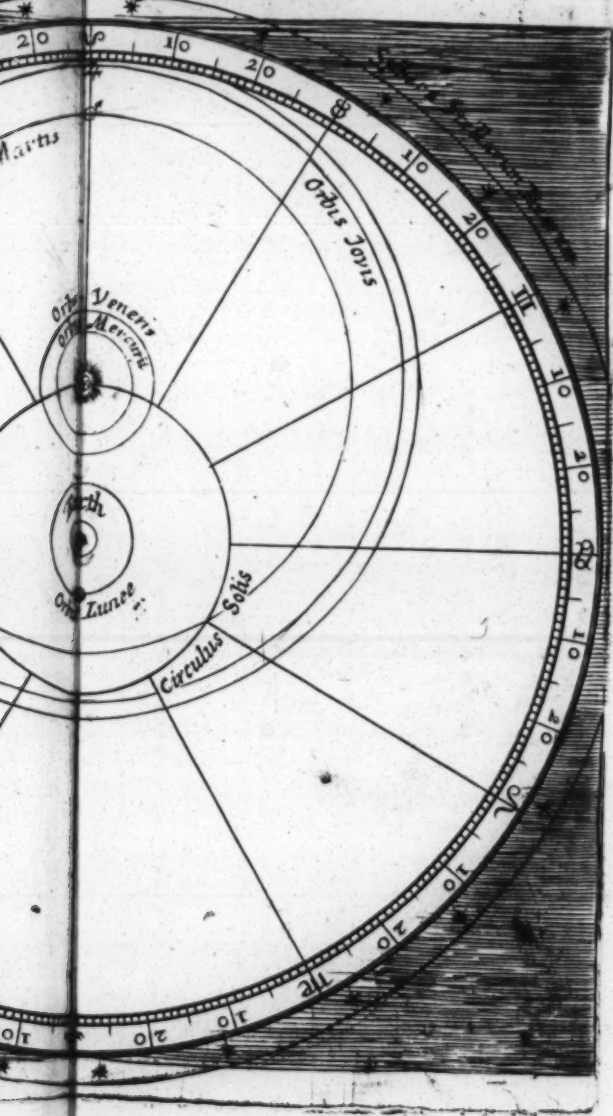




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He is once bigger than the Earth ; about his Body  
is a bright flat Ring which encompasseth him about.

### *Of the Moon.*

The Moon is a secondary Planet, and retains the Earth for her Center, about which she performs her Revolution in 27 Days, 7 Hours, 43 Min.

It is from the Center of the Earth to the Moon 103236 Miles.

The Circumference of her Sphere is 1277483 Miles, her Diurnal motion is 13 Deg. 10 Min. 35 Seconds.

So she wheeleth about in a Day 46757 Miles, in an Hour 1948 Miles, and in a Min. 30 Miles and a half.

She is less than the Sun 15924 times, and less than the Earth 45 times.

### *Of the Tychoanean System.*

THIS System was invented by the Illustrious *Tycho Brahe*, a Nobleman of *Denmark*, Lord of *Knudsthorp*, in the Island of *Schonen*, not far from *Elfenbourg*, who was the most diligent and exquisite Observer in his time, who framed this Hypothesis, as a mean between *Ptolemy* and *Copernicus*. He made a happy beginning, and glorious progress in the restauration of *Astronomy*, wherein he did rectify the motions of the Sun, Moon, and the fixed Stars, which appeared in that Horizon wherein he lived. In his Hypothesis, he supposeth that *Mercury*, *Venus*, and all the other Planets (except the Moon) in their motion, respect the Sun as their Center ; so that *Saturn* in opposition to the Sun is nearer to the Earth than *Venus* in Apogee, and that *Mars* in opposition to the Sun is nearer to the Earth than the Sun it self,

as may appear by inspection from the Hypothesis  
self.

## CHAP. II.

*A Description of the several Natures, Qualities,  
and Substances of the Planets.*

### *Of the Sun.*

WHose nature and substance by a probable conjecture, is supposed to be no other than a fiery Body, consisting of a true proper element Fire, partly liquid, and partly solid: The liquid being an Ocean of Light, moving with fiery Billows and flaming Ebullitions, as is manifest to those that look upon it through a Telescope: The solid part being like our Terraqueous-Globe, divided into Continents, Islands, Mountains, Rocks, that thereby the vehement motion exestuating Solar-Ocean might be restrained, and therefore may probably conceive that the Solar-Globe is as this Earth of ours, but lowed with vast Subterraneous Caverns, and Receacles of Fire, which break forth of the Solar, Ignimous Mountains, in the same manner as we find of Subterranean-Fires to break out of *Ætna*, *Hecla*, *Vesuvius*; and it is in all appearance as probable that the solid parts of the Sun, within which the fluid and liquid Fire is contained, are as Metalline Furnace. It is also evident, that the splendor as well of the fluid as the solid Fire of the Solar-Globe, is more bright than our earthly Fire or Flame, as you may see in the Map.

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The *Macula* or Spots that are seen in the Body of the Sun, are certain cloudy obscurities appearing upon his Disque. Their shapes and figures are of unequal form, and most irregular, which argues them not to be Stars or Planets moving about his Body. They have a motion from the Oriental part of the Sun's Disque, to the Occidental, which course they ordinarily finish within the space of 13 Days, more or less according to their greater or lesser Latitude: or they make their motion as it were in a *Zodiack* of about 60 Degrees broad, by the observation of which spots, it is found that the Sun hath a motion upon its own Axis from East to West, which conversion is finished in 27 Days, or thereabouts.

*A Table of the magnitude of the Sun, compared with the Earth, according to Ptolemy, Maurolycus, Clavius, and Barocius.*

The Sun's true Diameter contains	Its Circumference contains	The Area of its greatest Circle contains	Its common Superficies contains	Its solidity contains
Simple Diameters of the Earth.	Simple Diameters of the Earth.	Square Diameters of the Earth.	Square Diameters of the Earth.	The solidity of the Earth.
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*Of the Moon.*

The Moon is the nearest to us of all the Planets this our elementary Sphere, it being a dark and opacous Body, altogether deprived of innate or proper Light, evident in its total Eclipses, wherein she altogether loseth her lustre. Hence may be inferred that she hath her light from the Sun, and as she is opacous, so she is a dense Body, apt to receive and reflect the Suns light.

The Body of the Moon appears to be full of Eminencies and Depressions, like our Hills and Valleys apparent to the sense by the help of the Telescope, which spots and excreffencies varying their situation and magnitude, according to the divers access or recess of the Sun, to which their site is always opposite thence, evidencing to be the shadows and elucidations of the most eminent parts of the Moons-Globe resembling our Alps, Hills, and Mountains; from whence may be concluded, that the brighter and more splendid parts of the Moon to be those that are more dense, solid, and opacous, like our Earth, in regard they reflect a greater portion of light than the obscurer parts to reflect a less light, and therefore supposed to be pellucid, and diaphanous, agreeable to our Ocean, Seas, Lakes, and Rivers, from whence it may be inferred, that the Moon is composed of solid and liquid parts, as this our Terraqueous-Globe in which we inhabit; and therefore hath been conceived by most *Astronomers*, as well Ancient and Modern, that the Moon is as it were another Earth.

The spots that appear in the Body of the Moon are distinguish'd into ancient and new.

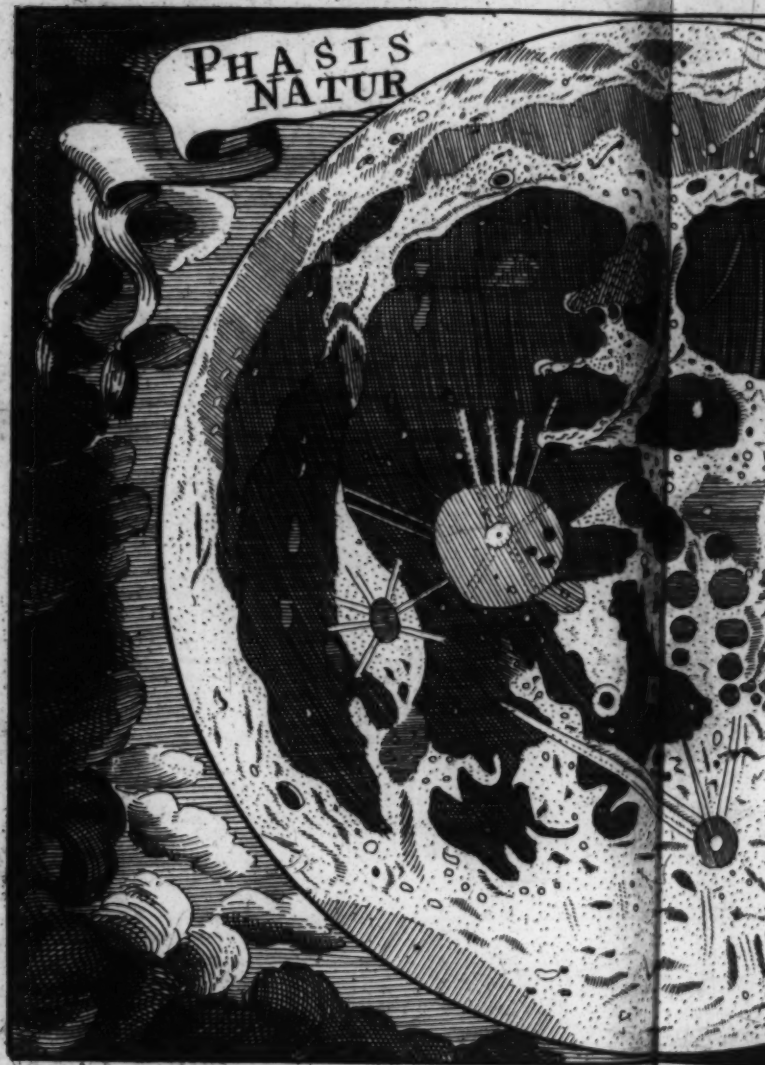
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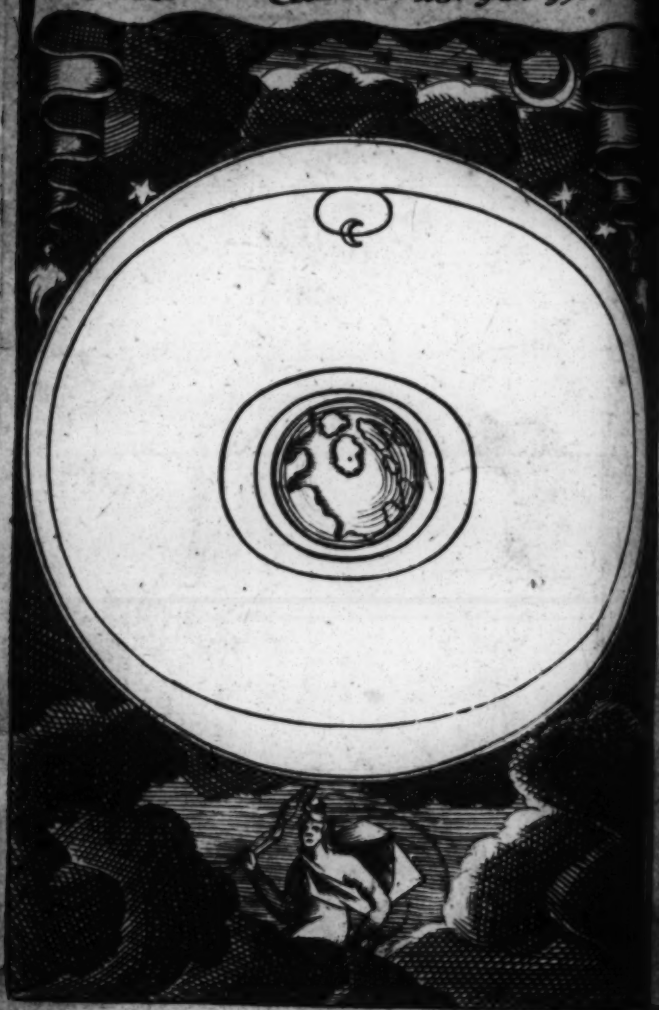






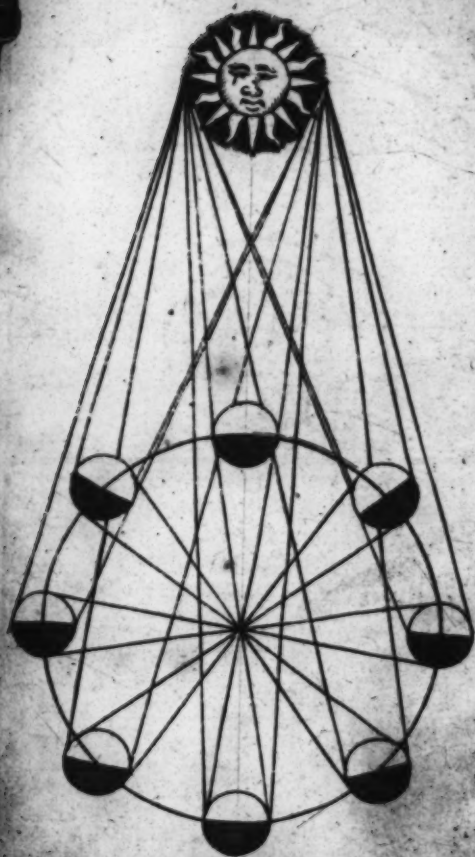


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times discernable, without the help of a Telescope, resembling large Seas, Lakes, and Bays.

The new ones are those lesser spots, which are not discernable, but by the help of a Telescope, which are various, differing in magnitude, situation, colour, &c. observed with exactness, described by sundry eminent, learned Astronomers, *Huygenius*, and *Langrenus*, &c. some of whom have imposed names and appellations upon the several eminencies that appear upon her surface, for the better knowledge of them, being of great use and advantage to all Students in *Astronomy*, and very necessary in the making of Observations: As also in Eclipses, for the better determining the quantity of an Eclipse of the Moon. According to this forementioned Hypothesis, the light parts representing the Land, and the darker parts the Seas, these two Maps in this Book are made both for its natural appearance, as well as for artificial representations, both taken from those of *Wheeler's* Observations; who hath also given names to the eminent parts of the Moon, having described and distinguished them by Geographical marks and denominations, transferring to them names proper to Terrestrial Continents, Promontories, Mountains, Islands, Seas, Lakes, &c. as may be seen at large in his Book called, *Selenography*. And in the preface of *Manilius*, by *Edward Sherborn Esquire*.



*A Table of the Moons distance from the Center of Earth, in Semidiameters of the same, and its Horizontal Parallax, according to Kepler, and Rodolphin-Tables.*

In Opposition or Conjunction.					
Distance from the Center of the Earth.			Horizontal Parallax.		
Apog. Semid.	Med. Semid.	Perig. Semid.	Apog.	Med.	Perig.
			/	//	/
59 :: 0	56.28	54 : 0	58.22	58.16	62.22

In its Quadratures.					
Distance from the Center of the Earth.			Horizontal Parallax.		
Apog. Semid.	Med. Semid.	Perig. Semid.	Apog.	Med.	Perig.
			/	//	/
59 - 0	56.28	54 0	58.22	60.53	63.

*The Apparent Diameters of the Moon according to Kepler.*

In Opposition, Conjunction, or Quartile Aspect.	Apparent Diameters of the Moon.	
	Apog.	Perig.
	/	//
In ♀ and ♂	30 — 0	34 — 10
In □.	32 — 32	36 — 00

of the true magnitude of the Moon, compared with that of the Earth and Sun, according to Kepler.

The true Diameters of the  
 Earth, and Moon, unto  
 that of the Earth, sup-  
 posed to be 100.

	Earth	Moon
as to	100	1500

The Solidity of the  
 Moon to the

Earth	Sun
as to	as to
1.59	1.204671

### Of Mercury.

The Figure of *Mercury* is orbicular, or round, not schematically, but Physically such, rising here and there with exuberating Hills, and Mountains; in the manner as this earthly Globe of ours, being an orbicular Body, and receiving its illumination from the Sun; whence at several times, it is seen under several faces and appearances. He appears in a figure that of the New Moon when he is Retrograde and approaching to an Opposition to the Sun. There are likewise observed in him several spots, successively changing one another, some light, some dusky, the light spots are by *Kircherus* conceived to be the said Terrestrial and Mountainous parts thereof, and by their successive motion, likewise evince, that he hath a Rotation upon his own Axis, determined within the space of 6 Hours, or thereabouts.

### Of Venus.

The most illustrious of all the lesser Planets is Venus, and from the remarks made by the Ancients, these

these are some that follow. First, She is observed to precede the Sun rising in the Morning before him; sometimes to follow the Sun in setting after him; and sometimes in Conjunction with the Sun; other times receding from him; and sometimes differ in magnitude, being greater or lesser, which they concluded her sometimes to approach near the Earth, and to be in *Perigeo*, and other times recede further from it, and to be in *Apogeo*.

Besides these Observations of the Ancients, Modern Astronomers, by the help of the Telescope, have discovered several other signal Phenomena's, as that she is subject to the same variety of changes as the Moon, sometimes almost full, and at other times gibbous, now and then horned, as well when she is *Vesperal* as *Matutine*. She is sometimes seen by day, as before noted. Of the structure, nature, and substance of this Planet, from the forementioned Phenomena it may be concluded to be an opacous Body, and that its light comes from the Sun, that it is of a Spherical Figure, because spherically illuminated. It is of a round and uneven Superficies, as appears by Telescope Observations. It is made up of solid and liquid Matter, as our Terraqueous Globe, and is found to have Rotation upon its own Axis and Center, which compleats within the space of 14 Hours.

### *Of Mars.*

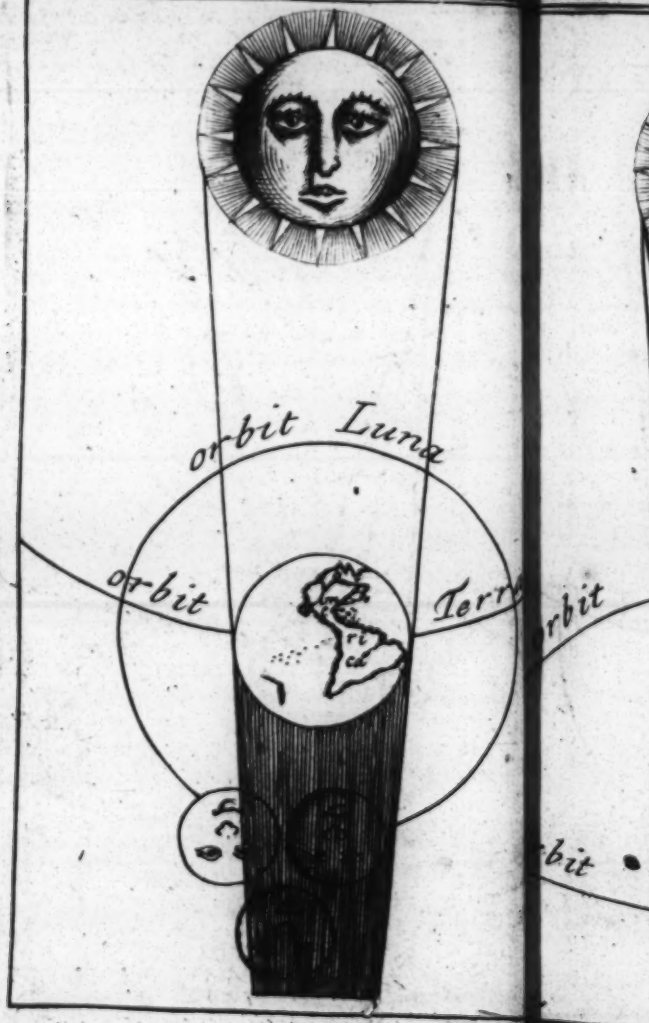
Although this Planet of all the rest is the most observable, (as both *Fliny* and *Kepler* affirm) it has not been able to be hid from the subtilty of Astronomical Spies, as the ingenious Esq. *Shirley* says; He is observed to move in a large Orbit about the Sun, as the Center of its motion, within

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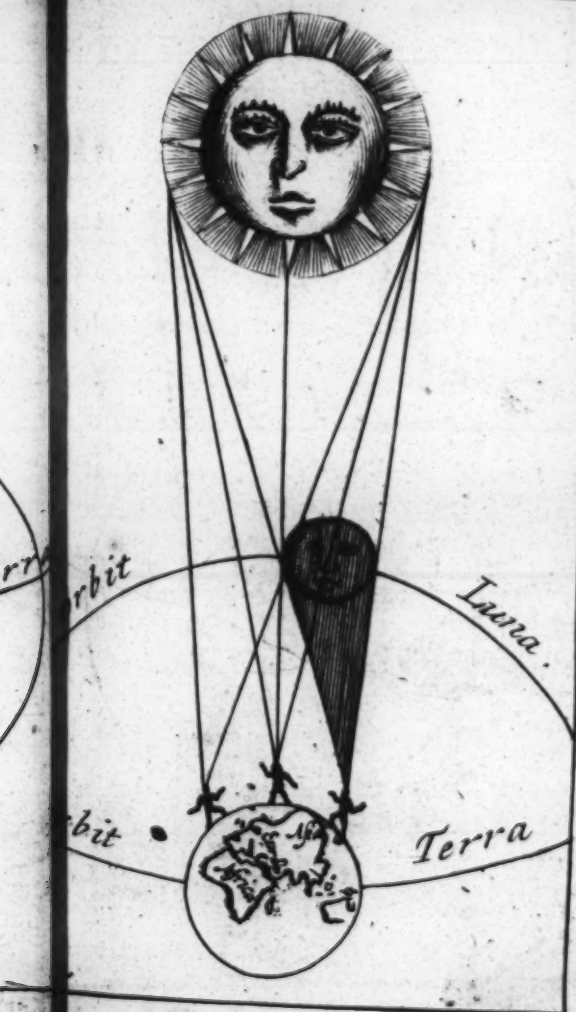
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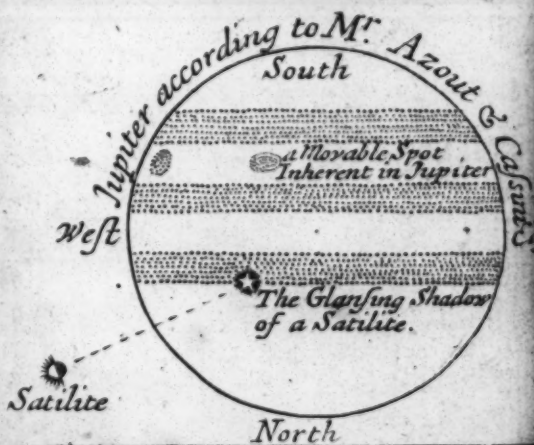








# The Systeme of JUPITER Pha



# Phasis of VENUS & MARS



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He includes the Earth with the Moon, *Mercurius* and *Venus*, and takes up a great part of the Solar System; and when he is in *Perigeum*, he comes to Earth, then the Sun and the notable increase of light, by reason of which he is taken for a Comet or Star.

As to his Figure, it is Spherical, and by some hath been observed with a black spot on the middle of his face. Monsieur *Hugens* in the Year 1656, observed a broad obscure Zone or Belt to shadow half the face of the said Planet. His light is derived from the Sun, as that of the Moon, as to the structure and nature of his Globe composed of solid and liquid matter.

### Of Jupiter.

The Planet *Jupiter* is one of the most noted and efficient Planets, He is carried in an Orbit above Mars, as is manifest by the mutual Conjunctions of the Planets, at which time he is obscured and hidden from our sight by the interposition of *Mars*, as the Moon is by that of the Moons Body.

*Accius* reports in the Year 1643, that he observed the edges and margins of his Globe to be rough and uneven, rising like Hills and Mountains, are covered in his Body by help of an excellent Telescope, two small spots and two great ones, like holes or Caverns, one round, and the other oval. *Hévelius* affirms, that the face of *Jupiter* is variegated with spots, in a manner like that of the Moon, but it is manifest by frequent Observations that there is a Belt (as it were) encompassing the Disque of the Planet; and this also admits of great varieties in appearance, this Belt not appearing always straight but bending, with its convexity upwards, and sometimes  
C down.

downwards, evident marks of the Motion and Rotation of the Planet upon its own Center. As the structure of his Globe, it may be concluded as the rest of the Planets, to be composed of solid liquid parts; and although his Body is Physically round, yet it is full of uneven Asperities, having motion upon its own Center finished in 11 20 Hours, 1 Min. 15 Seconds, and that its Zones Belts are solid parts, less capable of receiving than the rest of the solid or liquid parts are.

### Of the Satellites of Jupiter.

The Satellites are four Stars so called, moving about the Body of *Jupiter* as his Guards, discovered first in *Italy*, by *Galleus*, in the Year 1610 in *Germany* by *Simon Marius*, by means of a Telescope without which, by reason of *Jupiter's* splendour, their small distance from him (none of them being above 12 Degrees from his Body) they are not to be discerned, and therefore altogether unknown to the Ancients. These by *Galleus* (their first discoverer) were called *Sidera Medicea*. The first of *Jupiter* he call'd *Cosmos minor*; the next *Cosmos major*; the third *Maria Medicea*; the fourth *Victoria Medicea*. *Simon Marius* giving to the first the name of *Jovial Mercury*; the next to the third *Jupiter*; to the fourth *Saturn*. *Jo. Baptista Hodierna*, who first of all published *Ephemerides* of the motions of the said Stars, gave the inmost (from the young Prince of *Tuscany* *Principharmus*; the second (from *Victoria* Duke to the Grand Duke) *Victripharmus*; the third (*Cosmos* the first Duke of *Florence*) *Cosmipharmus*; the last (from *Ferdinand* the late Duke) *Fernandipharmus*.

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the greatest Digressions from the Body of *Jupiter*,  
 computed in Semidiameters of the same, are as fol-  
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satellites.	1	2	3	4
	3.0	5.0	8.0	12.0
	Sem.	Sem.	Sem.	Sem.

Their Periodical Revolutions are in  
 their several Orbits, according to  
*Hovellius*.

Sat.	Days.	Hours	Min.	Sec.
1	1	18	28	00
2	3	13	18	0
3	7	3	57	0
4	16	18	9	0

Their Diurnal and Horary motion in  
 their Orbits, each divided in 360  
 Deg. according to *Marinus*.

1	Diurnal.	Horary.
	Gr. ' "	Gr. ' "
1	203—25—0	8—28—30
2	191—17—22	4—13—0
3	50—14—57	2—6—30
4	21—28—48	0—53—42



## Of Saturn.

The highest, and of all the Primary Planets therto known ) the most remote from the Earth his course above all the rest, and beneath the Stars, and hath little or no Parallax, nor are any of the fixed Stars or Planets that afford to the serving Eye, by means of the Telescope, such fit and admirable Phenomena.

The chiefest, and most worthy of note, are the First, That he appears girdled about with a Ring of Light.

Secondly, That he hath several lesser Planets the Circum-Jovials, moving about his Body.

Thirdly, That his Figure appears variously & credibly diversified, being sometimes beheld round form, at other times represented with Rundles on each side, which at other times their Figure, and appear like certain Hand Ears, like a two ear'd Porringer.

Monsieur *Hugens*, by his Observations of Planet, hath noted, that the said Ring about Body of *Saturn* is every way alike distant from a plane whereof always keeps in a certain and constant inclination to the Ecliptick, appearing according to diversity of Aspect, as you may see more plain the System of *Saturn* in this Book.

There is also several other Stars, one discovered about his Body by *Hevelius* at *Dantzick*, Sir *Paul Neale*, and Sir *Christopher Wren*, both in *England*.

And two others discovered by *Signior Cassini* at the Royal *Parisian* Observatory, the one nearer his Body than the *Hugenian*, the other remoter.

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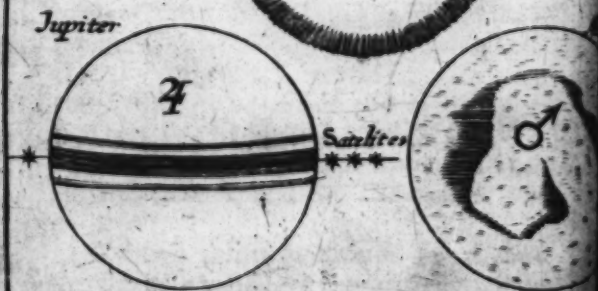
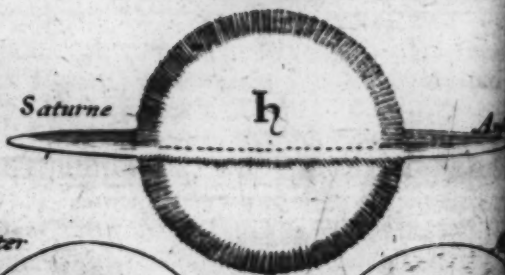
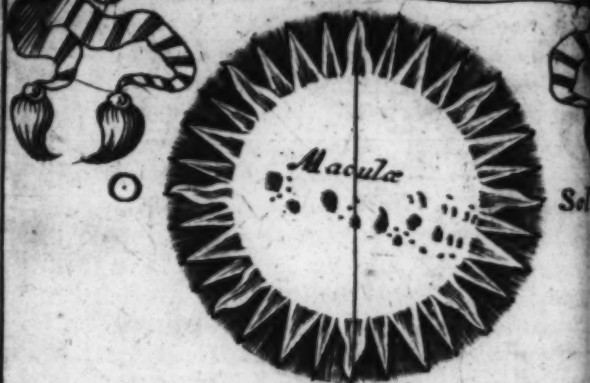
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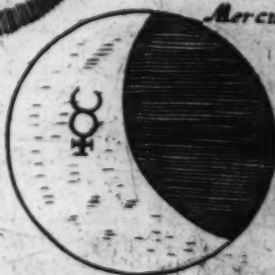


*Luna*



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*Table of the  
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Names of the Pla- nets.	Pl dif th Se
Sol	
Luna	
Saturnus	4
Jupiter	2
Mars	
Venus	
Mercurius	

ther from him than that. The Revolution of  
each Interiour Planet he found to be compleated in  
Days and a half, the Exterior in something more  
than 80 Days.

This Planet (as the rest) may be probably concluded  
to be composed of solid and liquid matter, of a  
red temper and colour; that it is Spherical, but  
shall full of uneven Asperities, and that it is an  
opaque Body, and illuminated *ab extra*, and al-  
though the Suns light may approach it, yet it is not  
sufficient to give a requisite lustre to so great and so  
distant a Body, but must have doubtless the assistance  
of some light from some other Fountain. He hath  
supposed his own Center, performed in 39 days  
hours, 1' 16".

*Table of the magnitudes of the Planets, in respect  
to the Earth, according to Hevelius.*

Names of the Pla- nets.	Planets diff. from the Earth	Apparent Diame- ters.	True Diame- ters.	Circumf. of their Disque.
	Sem. Ter.	Min. Sec.	Mil. Ger.	Mil. Ger.
<i>Sol</i>	5176	31 : 54	41150	129300
<i>Luna</i>	59	30 : 00	442	1389
<i>Saturnus</i>	49040	00 : 16	3362	7945
<i>Jupiter</i>	26815	00 : 18	2054	6455
<i>Mars</i>	7855	00 : 05	160	503
<i>Venus</i>	5157	00 : 17	360	1131
<i>Mercurius</i>	5157	00 : 06	130	490

## C H A P. III.

*A brief Description of Fiery-Meteors, Comets.*

**A**S for fiery-Meteors, their place and general Region is in the upper, lower, and in the middle Region of the Air, and are *Draco Volans*, *Ignis Fatuus*, *Ignis Lamps*, *Sidus Helena*, &c. have their birth in the lower Region: Those which are in the middle Region, are *Stella Cadens*, *Lacus Ardens*, *Fulmen*, &c. And in the upper Region of the Air, are reckoned *Fax*, *Ignis Perpendicularis*, *Bolis*, *Capra Saltans*, &c. all which arise from the vapours and Exhalations which the Earth continually exhales and diffuses round about through its Atmosphere.

*Of Comets.*

As concerning the matter, place, and effect of Comets, *Astronomers* and *Philosophers* Ancient and Modern, do much differ in their opinions, some will have them not to be any thing distinct from other pre-existent Celestial Bodies, but rather a meer appearance made by the reflection and refraction of the Sun's Beams.

Others are of opinion that they are fiery Meteors generated of copious exhalations from the Earth's Sea, and elevated to the supreme Region of the Air, and hurried about by the swift motion of the



mobile, and take fire, and last as long as the sulphery, etuous, fat matter of which they consist, affords them fuel to burn or shine.

Others are of opinion, that Comets, if not all, for the most part are created by God of nothing, at least formed of such matter as best pleaseth him, whether Celestial or Elementary, and of such shape and figure as may serve to terrifie or admonish Mankind, and presignify Calamities to ensue.

### *Of the Tail, Train, or Bush of the Comets.*

*Aristotle* and his followers asserts the Bush or Train of a Comet to be an Exhalation set on fire, and diversified according to the divers disposition of the matter that feeds its flame.

*Petrus Apianus* makes the Bush of the Comet to be nothing else but the Rays of the Sun, transmitted through the semidiaphanous head thereof, as it were through a Globe of Glass.

*Kepler* is of opinion, that the Tail of a Comet is enlightened by the Suns Beams passing through the Body of the Comet, which he imagins to be purellucid, yet dense withall.

*Galleus* supposes the Tail of a Comet to be of its own nature, straight, as being produced by the Suns Beams, but appears to us to be crooked, when near the Horizon, and inclined thereunto, by reason of the refraction of the Species, or of the visual Rays made in the Spherical Superficies of the Air, which near the Earth, is filled with gross vapours.

of

*Of the different shapes, and forms of Coats  
and their Tails.*

Some resembling the form of a round Dish or Platter: Of this kind the chief is called *Rosa*, is of a bright shining Silver colour, mixed Gold or Amber; and some of this sort that are perfectly round resembling the form of a Shield.

Others resembles the form of a Tun, of which there are of divers kinds; some of an Oval figure, some like a Barrel set on one end; some inclined and cut short off.

Others resembles a Horses Main, not always the same shape or figure. Of these *Pliny* saith very swift of motion, and turneth round about self.

Others resembling burning Lamps or Torches, and are of several shapes; sometimes their flames blaze carried upward like a Sword.

And some are formed like a Dart or Javelin.

And some like a Cimitar with a Hilt.

And some like a Lance, with its Stream of smoke very long; thin, and pointed.

Others whose Heads are for the most part circular, having a long Train, very thick and long; all these will better appear by the following Schemes hereunto annexed, bearing these several appellations, 1. *Rosa*. 2. *Pithius sive Doliiformis*. 3. *Hippus seu Equinus*. 4. *Auricomus sive Auricomus*. 5. *Hircus*. 6. *Lampadias*. 7. *Cornutus*. 8. *Anconia*. 9. *Xiphias*. 10. *Lonchitis seu Hastiformis*. 11. *Verus seu Pectica*. 12. *Torus seu Quadratus*.

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Solaris sive Rosa Didiiformis



Clypeiformis



Clypeiformis



Didiiformis circata Didiiformis truncata Didiiformis caudata



Equinus barbatus



Equinus quadrangularis



Equinus



Lampadiformis



Lampadiformis



Lampadiformis



Nixus

Infusumbe circadatus



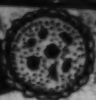
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Various forms of Corns as they have  
 been seen in several ages of the World.

*Corniformis*

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*Corniformis  
 Lunatus*

*Cornus Piceiformis*

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*Cornus Divaricata*

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*Tubiformis*

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*Loculiformis Lunatus*

22



*Loculiformis Ellipticus*

23



*Loculiformis rotundus*

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*Varia*  
*Cometarum*  
*figurae sicut*  
*Variae Mundi*  
*causibus q-*  
*permutantur*

*Rafformis*



*Eusiformis*



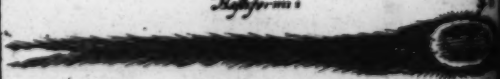
*Eusiformis*



*Eusiformis incurvus*



*Halsiformis*



*Eusiformis*



*Halsiformis*



*Herz*

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*Herzica bifurcata*

33

*Cometa quadratus*

34

*Coniformis*

35

*Cometa Pyramidalis*

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*Cometa Anghifera*

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*Cometa Anghifera*

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*Cometa Anghifera*

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account of  
the Comets  
since the Year  
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account of these splendid Enigma's ( viz. the Comets ) that have appeared to the World, since the Year of our Lord 1600, unto the Year 1679.

In the Year 1607 appeared a Comet on the 26 Day of September, and lasted until the 5th of November, seen in the Evening about seven of the Clock, from thence all night. It appeared under the *Great Bear*, a little higher than the Star which is toward the Square, in the 30 Degree of *Leo*; and 36 of North Latitude, its Parallax not exceeding 1 deg. and consequent its place was in the highest Heaven or *Æther*. It moved in direct motion from the former Foot of the *Great Bear* under its Belly, passing by the midst of *Bootes*, and struck the *Serpent* lying under the Hand of *Ophiucus*, arrived at his most Foot, and stayed in his Leg. The Orbit in which it was carried, seemed to be a greater Circle, bent toward the *Ecliptick*.

Its Head was not of an equal roundness, but here it was more exuberating. Its apparent magnitude greater than any of the fixed Stars, or *Jupiter*. Its colour was pale, and waterish, like that of the Moon. Its Tail was somewhat long and thick, projected with some little deviation against that part of the Heaven opposite to the Sun. It appeared like a shining Lance or Sword, 7 Degrees in length. The Effects that followed this Comet. The Duke of *Arrain* died. A great War between the *Swedes* and *Danes*.

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In the Year 1618, the 25<sup>th</sup> of *August* appeared a Comet, and lasted until the 24<sup>th</sup> of *January* following, in all 60 Days, appearing about the Clock before Sun rising, a little beneath the Fore-foot of *Ursa major*, inclining toward the *ſign* of *Leo*, in the 16 Deg. of the ſaid *ſign*, and in 21 of North Latitude. It appeared (by the help of Telescope) to be Hairy, its light not clear, but dusky, its magnitude like that of *Venus*, colour palish. It run from *Scorpio* to the middle of *Cancer*, above one third part of the Heavens, at Southern, at laſt Northern. Its Tail was like of an Eſtridge bowed, in length 45 Degrees. In *Persia* it was obſerved to be like a Cometary, apparent, as well as its true magnitude, was variable and unconstant.

The Effects that followed this Comet, was the death of the Emperor *Matthias*. *Ann Queen of England* died, and the Emperſs of *Germany* about this time. Many eminent mutations in parts of *Europe* ſucceeded this Comet.

In the Year 1647, there appeared a Comet on 29<sup>th</sup> of *November*, laſted but two Days, ſeen in Evening at half an Hour paſt eight, in the Conjunction of *Coma Berenices*, not quite 5 Degrees from the left Leg of *Bootes*, about 10 Deg. from *Arcturus* in the eighth Degree of *Libra*, in 26 Deg. of North Latitude. Its motion contrary to the Series of *ſigns*. viz. From the Head of *Bootes* toward the Eclipse and *Spica Virginis*. It was ſomething leſs in ſplendour than *Arcturus*, but ſufficiently bright and ſplendid. Its Tail was erected upwards toward Zenith, in length 12 Degrees, like to a Broom.

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the Year 1652, there appeared a Comet on the 10th of *December*, it lasted while the 10th of *January* appearing about 6 of the Clock in the Evening, Deg. of *Gemini*, and 31 Deg. of South Latitude, far from *Rigel*, in the left Foot of *Orion*. Its motion was constantly Retrograde from South to North, by the *Hare*, foot of *Orion*, to the *Pleiades*, from thence as far as *Perseus*. Its Head was small, and little less than the Moon; its light pale and dull, overcast by a thin Cloud; its magnitude not always the same. Its Tail at first appeared backward opposite from the Sun, resembling a sharp-pointed Cone, in length 7 Degrees, of a whitish but pure colour. About the 7th of *January* it quite lost its thin Rays, like Hairs; its Tail increased, being at first 3440, at last 165000 German Miles.

In the Year 1661, there appeared a Comet on the 1st of *February*, it lasted 53 Days, seen in the Evening 47 Min. after 5 of the Clock, Eastward beneath the *Dolphin*, between the *Eagles-Head* and the lesser *Horse* in 10 Deg. of *Aquarius*, 22 Deg. of North Latitude, in the very *Æther* or highest Heaven, at first two thousand, at last 9000 Semidiameters of the Earth distant from it, and consequently according to the opinion of *Hevelius* higher from the Sun it self. Its course was from East to West from the Head, Neck, and nether Wing of *Aquila*, in a line almost parallel to the *Ecliptick*. Its Head was small, and of a yellowish colour, clear and conspicuous. Its Tail extended about 6 Degrees in length toward the *Dolphin*, narrower where it joined to the Head, pointing to that part of Heaven opposite to the Sun, but with some kind of deflection.

In the Year 1664, there appeared a Comet on  
 14<sup>th</sup> of December, it lasted about three Months,  
 at first in the Morning about five of the Clock, a  
 wards in the Evening, near the Beak of the O  
 in 8 Deg. of *Libra*, and 22 Deg. of South Latit  
 In the highest Æther its Parallax at the begin  
 59'', in the middle 4', and in the end 16'', for  
 at first it was 3500, then 1000, and at least 12  
 Semidiameters of the Earth distant from the T  
 strial Globe, and higher than *Mars*. Its motion  
 Retrograde from *Corvus* by *Hydra*, *Argus*, *C*  
*major*, *Hare*, *Eridanus*, and *Whales-Head* unto  
 its course somewhat deflecting from a great Circle  
 ran through more than five Signs of the *Zodiack*,  
*Libra*, *Virgo*, *Leo*, *Cancer*, *Gemini*, *Taurus*,  
 unto *Aries*, and in its Progress ran 154 Deg.  
 Its Head was very conspicuous, somewhat yellow  
 the midst thereof was discern'd a clear light  
 rounded with another more obscure. Its Tail  
 tended 14 Deg. in length, sometimes longer, so  
 times shorter, always extended to that part of  
 ven opposite to the Sun, yet with some devia  
 sometimes Northward, sometimes Southward.  
 wards its end it was sometimes quite lost, and  
 again recovered.

In the Year 1665, there appeared a Comet on  
 sixth of April, lasted 14 Days, seen in the Mor  
 half an hour after one, in the Breast of *Pegasus*  
 15 Deg. of *Pisces*, and 27 Deg. of North Latit  
 Its Parallax at the beginning was found to be  
 which decreased successive to 41'', whence its dist  
 from the Earth then 3000 Semidiameters of the E  
 towards the end 5000, consequently 60 times li



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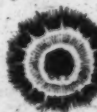
*Cometa 1577 Dic 13 Nov  
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*Cometa 1590*



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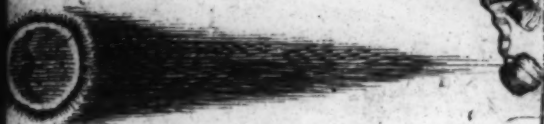


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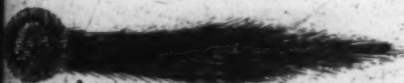


*Cometa 1647*

cometarum,  
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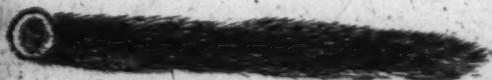
Cometa 1672



Cometa 1661



Cometa 1664-1665



Cometa 1677

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than the Moon at first, and at last equal to the height of the Sun it self. Its progress was by *Pegasus*, under the Head of *Andromeda*, by the Northern Fish, as far as unto *Artes*, in a motion continually direct. At the beginning it ran through in one Day, 4 Deg. Minutes, and at last 2 Deg. 23 Minutes. Its Head was round of a yellowish colour, it's light, quick, and bright; in the very middle was a Nucleus of a conspicuous magnitude, of a Gold colour, encompassed equally about with another thinner kind of matter. The apparent Diameter of the Head, was 7 Min. Its Tail at the beginning extended almost 17 Deg. in length, projected between the Mouth and the foremost Foot of *Pegasus* Westward: Where it issued from the Head it was thick and lucid, and of the same dense matter with that of the Head, but toward the end or Cuspis more thin and dilute. It stretched sometimes in length to 25 Deg. streaming to the part opposed to the Sun, yet with some little deviation Southward.

In the Year 1668, there appeared a Comet the 5<sup>th</sup> and 10<sup>th</sup> of *March*, observed by *Signior Cassini*, at *Bologna*. About the first Hour of the Night (after the *Italian* Computation) the Head or Body was not seen, being hid under the Horizon. The Tail was of a stupendious length, being extended (as it appeared at *Lisbon* in *Portugal*) over almost the north part of the Visible Heaven from West to East, from the *Whale* through *Eridanus* to the Star that precedes the Ear of *Lupus*.

In the Year 1672, there appeared a Comet on the 2<sup>nd</sup> of *March*, lasted till about the end of *April*, (as *Signior Cassini* computed) seen both Mornings and

and Evenings, at first between the Head of *Andromeda* and the *Pleiades*, afterwards having continued course towards the Root of the Southern-Horn *Taurus*, and having passed the Ecliptick, went above the top of *Orion's* Head to the Milky Way. Its greatest declination from the Equator Northward was 38 Deg. and a half. He made 2 Deg. 32' of motion in one Day. In the great Circle of its apparition, its Head appeared in the Telescope almost round. The Tail was almost imperceptible, and appeared of the length of two Diameters of the Head or thereabouts, not above 3 or 4 Min. of a Degree.

In the Year 1677, there appeared a Comet, which rose on the 21 of *April*, about 2 in the Morning near N. E. by N. It had a short bushy Tail about 5 Degrees in length, (to appearance about 2 Years) pointing towards the right Foot of *Andromeda*. The Head of the Comet was of a pale colour, as big as a Star of the first Magnitude, and was in the Longitude of 11° of *Taurus*, and in the Latitude 18 Deg. On the 23 of *April* the same Comet rose after 2 in the Morning, the Tail streaming towards the Star at the Knee of *Cassiopea*, and being in Longitude 17 Degrees of *Taurus*, and in Latitude 17 Deg. Notherly.

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### *Of the fixed Stars.*

**T**Hese Stars are said to be fixed, because they always keep (at least seemingly) the same variable distance from one another, and from the Ecliptick, as if they were so many Studs of

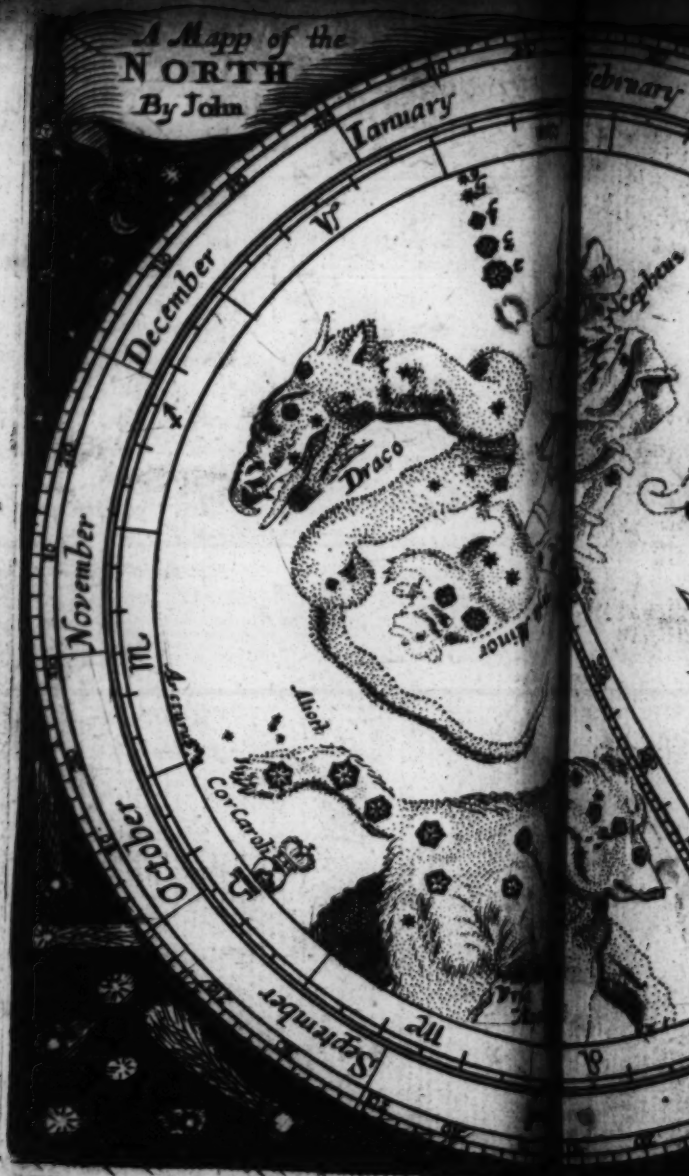
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In the Crystal Firmament, and for this reason  
 it conceives, the multitude of the fixed Stars  
 (as if it were an Army drawn up in Battel Array)  
 might be called the *Militia* of Heaven, and the  
 inquiries touching these glorious and splendid Bodies  
 under these following Heads,

First, Their Substance.

Secondly, Their Light, Colour, and Scintilla-  
 tion.

Thirdly, Their Number.

Fourthly, Their Figure.

Fifthly, Their Magnitude.

Sixthly, Their Place and Distance from the  
 Earth, or rather the Sun.

### *Of their Substance.*

As to their Substance, the opinions of the Ancients  
 are various: Some hold them to be of a fiery nature;  
 others hold them to be Earthly, yet withall fiery;  
 others conceive them to be composed of the same  
 matter as Exhalations and Vapours, and consequent-  
 ly to consist of a substance, partly Aqueous, partly  
 fireal. But according to the Sentiments of divers  
 eminent Modern *Philosophers* and *Astronomers*,  
 it is supposed that their Bodies are compound and not  
 simple, made up of Elementary matter, formed  
 into fiery Globes, and consisting of matter both  
 solid and liquid, as this Terraqueous-Globe of ours,  
 and consequently subject to corruption and altera-  
 tion.

### *Of their Light.*

As to their Light, that which is to be considered is,  
 whether

whether it be innate or borrowed of the Sun : the  
ter of which is maintained by *Albategnius*, and  
divers other *Philosophers* and *Astronomers*, and  
reasonably be supposed that each of the fixed Stars  
be a head or distinct part of the *Mundan-Sphere*,  
and as the Sun hath several Planets constituted  
carried about him, so likewise every one of the  
Stars hath other *Mundan-Bodies*, like Planets,  
posed and moving about them, though not to be  
cerned by us, by reason of their great distance  
our Earthly habitation.

### *Of their Colour.*

The colour is visibly various according to the  
ference of their light, tempered by the divers con-  
tutions of their matter or substance, some appear  
of a ruddy, others of a Gold Colour ; some of a Sil-  
white, some pallid, others of a Leaden hue ; where-  
some have made an estimate of their natures, and  
ranged them under the several Planets, of whose  
qualities they conceived them to participate, ac-  
ding to proportion they carry of the resemblance  
their Colours.

### *Of their Scintillation.*

In this they are particularly distinguished from  
Planets, for the Planets have no such twinkling  
glimmering light, but generally all the fixed Stars  
more or less, and at sometimes more than at other  
especially when the Wind blows Easterly. The cause  
of this their Scintillation is variously discoursed of  
*Philosophers* and *Astronomers*. *Aristotle* among the  
Ancients assigns the cause thereof to their remoteness

from our sight, by which they are weakly, and as it were by a trembling weariness reached. But others assign the cause thereof only to Refraction; and therefore (say they) *Syrus* and *Procyon* twinkle or shimmer more than any of the rest, because they never descend above 45 Deg. above the Horizon. *Gassendi* more probably conceives this twinkling of the fixed Stars from that native light they are endued with, like that of the Sun, sparkling and casting forth quick darted Rays, as our weaker sight cannot hold without that trembling passion. To which may be added the quick and swift motion of theirs about their own Axis, by that means making a more sudden variation in those radiant Objects than the eye can pursue: But *Hevelius* rather imputes their twinkling to a constant Eribration of lucid matter, or a continual Expiration of fiery Vapours or Effluvia from their Celestial Bodies, in the same manner as the Fulgorations and Ebulitions in the Body of the Moon.

### *Of their Number.*

As to their number, if we consider them, which are most notable and visible, as being reduced to the vulgar degrees of Magnitude, we shall find them (according to *Ptolomy's* computation) to amount to but 1022. And *Pliny* reckons them to 1600. If we reflect upon the absolute number of all the Stars in the Firmament, we may conclude them to be innumerable, at least by Humane calculation, either taken upon by the bare Eye only, or by the help of a Telescope, by the means of which last, *Gallileus* reckoned that he discovered in the Asterism of the *Pleiades* above 40 Stars, in the space between the Girdle and Sword of *Orion* no fewer than 80, and in little more

more than one Degree's space in the constellation *Orion* above 500 Stars. Another great *Astronomer* affirms, that in the same Constellation, he observed above 2000 Stars. And according to the proportion of *Gallileo's* Observation, there would be found least 62500 Stars, whereas look'd upon by the bare Eye only, there appears not above 63: According to the same proportion, if the rest of the Constellations were examin'd, the difference computed of the number of the Stars, appearing by the Telescope and above those discovered by the bare Eye, might be reckoned above 1000000 Stars.

### *Of their Figures.*

As to their Figure, they are apparently spherical or round. But *Kepler* describes them like so many lucid points or sparks, casting forth every way Rays of Light, so that we may apprehend them to be only Physically round, not Mathematically: For their Superficies are found to be uneven, and to consist of many angles and sides.

### *Of their Magnitude.*

As to their Magnitude, These following Tables will give account thereof, according to the Calculations made by several eminent *Astronomers*.

1. Table of fixed Stars.

their severall Magnitudes.

according to Tycho, Longomontanus, &c.

2. Table of Stars, as they appear on Earth.

their severall Magnitudes.

according to Tycho.

3. Table of Stars, as they appear to that of Earth.

their severall Magnitudes.

according to Tycho, Boyer.

1.



1. Table of the apparent Diameters of the fixed Stars.

their several magnitudes.	1	2	3	4	5	6
According to W. L. Longo, &c.	2.0	1.3	0.1.5	0.45	0.30	0.20

2. Table of the true Diameters of the fixed Stars, and how many Diameters of the Earth each contains.

their several magnitudes.	1	2	3	4	5	6
According to W. L. Longo, &c.	$4.1\frac{1}{3}$	$3.1\frac{1}{8}$	$2.1\frac{1}{3}$	$1.1\frac{1}{3}$	$1.1\frac{1}{4}$	$0.1\frac{1}{2}$

3. Table of the Solidity of the fixed Stars to that of the Earth.

their several magnitudes.	1	2	3	4	5	6
According to W. L. Longo, &c.	as to 68.1	as to 28.1	as to 11.1	as to 4.1	as to 1.1	as to 1.1

4. Table from the Observations of Riccioli shewing as well their apparent Magnitudes as their true Magnitudes, deduced from their undermentioned supposed Distances from the Earth.

Degrees of Magnitude.	Names of the Stars of their several Degrees of Magnitude.	Apparent Diameter.	The greatest Distance of 210000 Semi-diameters of the Earth.		The least Distance of 100000 Semi-diameters of the Earth.	
			True Diam. contains the Earths Diam.	The Body contains the Earths Body.	True Diam. contains the Earths Diam.	The Body contains the Earths Body.
		///				
1	<i>Arcturus</i>	16.42	16 $\frac{1}{3}$	3932	8 . 0	51
2	<i>Aquila</i>	11.00	11 . 0	1120	5 . $\frac{7}{33}$	13
3	<i>Algol</i>	7 . 37	7 . 3	260	3 . $\frac{2}{3}$	3
4	<i>Propus</i>	6 . 10	6 . 10	216	2 $\frac{9}{10}$	2
5	<i>Pleias</i>	4 $\frac{4}{3}$	4 . $\frac{4}{3}$	92	2 $\frac{7}{10}$	1
6	<i>Alcor</i>	4 . 0	4 . 0	64	2 . $\frac{25}{100}$	

But seeing the *Astronomers* of the *Copernican* opinion, maintain the Magnitudes of the fixed Stars to be far greater than the former Table shews them to be, it will not be amiss to annex this following Table

5. Table shewing the Stars, the least, viz. parent Distances according to the hypothesis, as the Earths motion, ing the Distance as upon the ing to Kepler

the distances to be asserted

the diameters of the Earth

. 746 . 428 I

These Magnitudes, but in the to be rational. Of the place, th, (or rather that difficulty, on thereof to before Riccioli

5. Table shewing the true magnitude of the fixed Stars, that is ; one of the greatest, and one of the least, viz. Sirius, and Alcor, supposing the apparent Diameter of Sirius to be  $18''$ , of Alcor  $4''$ , according to the distance in the Copernican-Hypothesis, maintaining the Parallax made by the Earths motion, not to exceed  $10''$ , and imagining the Diameter of the Annual Orb to be such as upon these Principles it is stated to be, according to Kepler.

The distances to be asserted	The true Magnitude of <i>Sirius</i> .		The true Diameter of <i>Alcor</i> .	
	The Diam. of <i>Sirius</i> contains Diam. of the Earth.	The Body of <i>Sirius</i> con- tains the Earths Body.	The Diam. of <i>Alcor</i> con- tains Diam. of the Earth.	Its Body contains the Earths Bo- dy.
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These Magnitudes may seem by some to be exorbitant, but in the opinion of the Judicious, do appear to be rational.

Of the place and distance of the Stars from the Earth, (or rather the Sun,) seems to be a question of great difficulty, that *Pliny* pronounced the investigation thereof to be no less than a piece of madness : before *Ricciolus* treating upon this subject, thought

thought fit in the Front of his Discourse to prefix  
Theorem, as a most certain truth, *Parallaxis  
stantia fixarum non potest certa & evidenter obser-  
vare humanitus comprehendi.*

For it is not known whether the Stars are all in  
same Spherical Superficies, equally distant from  
Center of the World, or whether they are placed  
unequal distances, some higher, and some lower.  
This latter was the sentiment of the Ancient  
*Philosophers*, who conceived the difference of  
lustre and apparent Magnitudes, to proceed  
their diversity of situation, as more or less remote  
from our sight.

Of this opinion was *Manilius*, long since, declar-  
speaking of some Stars in *Orion*, appearing more  
secure than the rest. He gives the reason of that  
phenomenon to be, *Non quod clara minus, sed  
magis alta recedunt.* This Hypothesis so seem-  
ly rational, that the famous *Tycho*, *Gallileo*,  
*Kepler* have readily imbraced the same, and therefore  
it may reasonably be supposed, that their distances  
are as divers as those of the Planets. *Ricciolus*  
shows up five manner of ways of attaining in some  
probability the knowledge of their immense distances  
according to his computation the least distance  
may be assigned, is found to amount to 210000  
diameters of the Earth, the greatest being altogether  
uncertain by reason the crassitude or profundity  
their Heaven is not to be determined. The hori-  
zontal Parallax of the fixed Stars according to  
least distances, is but 1".

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The distance of the fixed Stars asserted by the Copernicans.

Authors.	Semidiameters of the Earth.	The greatest Parallax of the fixed Stars made from the Annual motion of the Earth.	
		The half from the Semidiameter.	The whole from the Diameter of the Annual Orb
Copernicus	Indefinite	* *	* *
Galileus	13.046.400	0 20	0 40

The distance of the fixed Stars, supposing the Earths Annual motion, and *Copernicans* distance of Earth from the Sun, according to the calculation of *Tycho* and *Maginus*, 7850,000 Semidiameters of the Earth, and the total Parallax of the fixed Stars 1'—00".

The distance of the fixed Stars from the Earth, supposing the Earths motion and the greatest Parallax of the fixed Stars to be 10". The distance of the Stars from the Earth in Semidiameters of the Earth, according to *Copernicus*, is 47.439.800; and the distance of the Sun from the Earth, is 1150 Semidiameters of the Earth.

Of

*Of the proper motion of the fixed Stars.*

**T**He motion of the fixed Stars is twofold :  
First, Their Circumrotation about their  
Centers, termed *Motus Vertigenis*, in which  
they are carried about with extraordinary celerity  
whence the reason in part is the cause of their  
Stellation.

The second is, Their motion of Revolution  
West to East, in which they are observed to move  
but very slowly. Touching this, it will not be amiss  
to insert the three following Conclusions of Riccius  
in his *Astronom. Reformat.* pag. 259, quoted by  
Esquire Sherborn, in the Sphere of Manslius.

1. That the motion of the fixed Stars is equal  
uniform.
2. That their Annual motion is not less than  
not greater than  $51''$ .
3. That it seems most probable that their Annual  
motion is  $50'' - 40'''$ .

From the supposition of their Annual motion  
 $50'' - 40'''$ , it follows that they compleat not  
Degree in the Ecliptick sooner than in 71 Years,  
 $\frac{16}{104}$ , or 19 Days, and 12 Hours in a manner;  
the whole Circle of 360 Degrees, they run  
through in less than 25579 Sidereal Years, which  
is the *Annus Magnus Platonius*, (though by the  
Ancients computed to extend to no less than 36  
Years.) But this will be clearly manifested by  
following Table.

*A Table of  
Longit.*

**Years.**

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*A Table of the motion of the fixed Stars in  
Longitude.*

Years.	I	"	'''	
I	0	50	40	
10	8	26	40	
20	16	53	20	
30	25	20	00	
40	33	46	40	
50	42	13	20	
60	50	40	00	
	Gr.	'	"	'''
70	0	59	06	40
80	1	07	33	20
90	1	16	00	00
100	1	24	26	40
1000	14	04	26	40
10000	140	44	26	40
25000	360	00	00	00



*Of the two Hemispheres of the Heavens.*

**T**He one shews the Constellations of the Northern, and the other of the Southern Hemispheres of the Heavens: Wherein may be seen the right Ascension and Declination of any of the Stars in either Hemisphere, by which any Star may be easily found, and the way or course of a new Comet may be traced in its way or Orbit, and several other uses, &c.

*The names of each Constellation, and the names of the Stars in each of them that are observable by the bare Eye, without the help of a Telescope, according to Bayerus, and others.*

<i>The Northern Signs of the Zodiac.</i>		<i>The Southern Signs of the Zodiac.</i>	
1	Aries	29	7
2	Taurus	48	8
3	Gemini	31	9
4	Cancer	35	10
5	Leo	43	11
6	Virgo	42	12
			Libra
			Scorpio
			Sagittarius
			Capricornus
			Aquarius
			Pisces.

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LEO.

VIRGO.

PISCES.



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*The Northern  
Stellations.*

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- 1 Urfa minor
- 2 Urfa major
- 3 Draco
- 4 Cepheus
- 5 Bootes
- 6 Corona
- 7 Hercules
- 8 Lyra
- 9 Cygnus
- 10 Cassiopea
- 11 Perseus
- 12 Auriga

*The Southern  
Stellations.*

---

- 1 Cetus
- 2 Orion
- 3 Eridanus
- 4 Lepus
- 5 Canis major
- 6 Canis minor
- 7 Argo Navis
- 8 Centaurus
- 9 Lupus
- 10 Hydra
- 11 Crater
- 12 Corvus
- 13 Ara
- 14 Corona Australis

*The Northern Con-  
stellations.*

1	Ursa minor	8
2	Ursa major	32
3	Draco	33
4	Cepheus	17
5	Boötēs	34
6	Corona	20
7	Hercules	48
8	Lyra	13
9	Cygnus	35
10	Cassiopea	25
11	Perseus	38
12	Auriga	32

*The Northern Con-  
stellations.*

13	Ophuchus	30
14	Serpens	37
15	Sagitta	8
16	Aquila	32
17	Antinous	7
18	Delphinus	10
19	Equiculus	4
20	Pegasus	20
21	Andromeda	26
22	Triangulum	5
23	Coma Berenic.	14

*The Southern Con-  
stellations.*

1	Cetus	27
2	Orion	49
3	Eridanus	42
4	Lepus	13
5	Canis major	19
6	Canis minor	8
7	Argo Navis	63
8	Cervaurus	40
9	Lupus	20
10	Hydra	29
11	Crater	11
12	Corvus	7
13	Ara	8
14	Corona Austr.	13

*The Southern Con-  
stellations.*

15	Pisces Notius	12
16	Grus	13
17	Phœnix	14
18	Indus	12
19	Pavo	16
20	Apus	12
21	Apis	4
22	Cameleon	8
23	Triangul. Austr.	5
24	Piscis volans	7
25	Dorado	7
26	Toucan	8
27	Hydrus	15
28	Robur Carol.	12

*The Total of the number of the fixed Stars  
the several Magnitudes.*

1	17
2	63
3	196
4	415
5	348
6	341
Obscure and Nebulous.	3
In forme of Sporades.	in the Zo- diack. 45
Northern	200
Southern	93
	<u>1802</u>

*Of the System of the Ancients.*

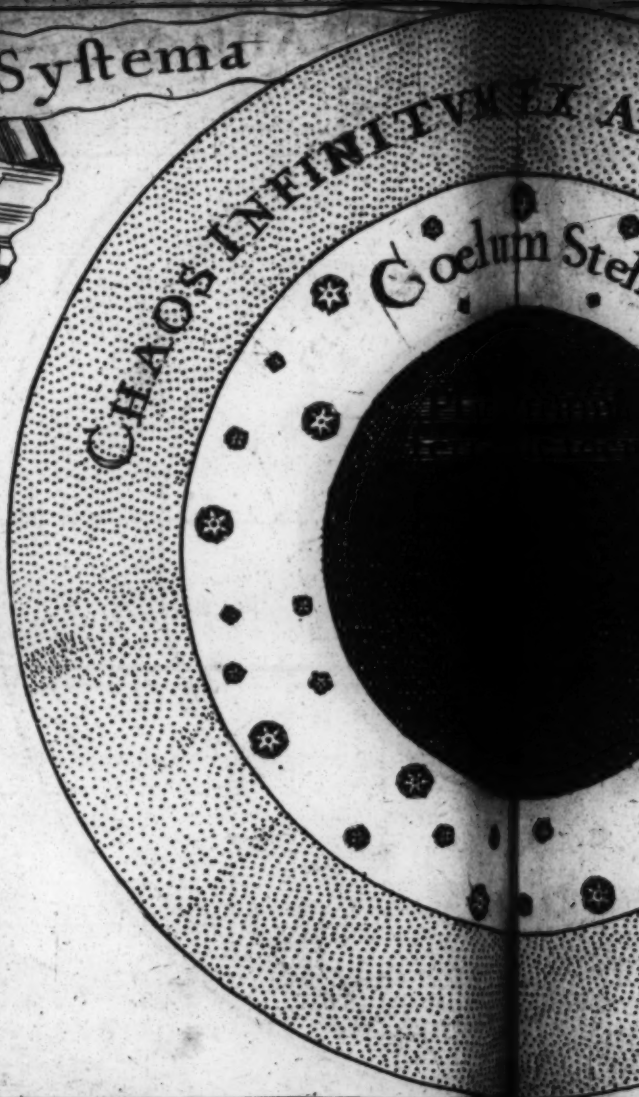
**T**He Ancient Philosophers ( especially the  
*Democritus* School ) and most of the Ma-  
thematicians of those times, asserted the Univer-  
se to be Infinite, and to be divided into two chief Por-  
tions : whereof they held one to be the World or World  
finite as to bulk and dimensions, but infinite as  
number. The other part or portion they extended  
beyond the Worlds, which they fancied to be a Co-  
llection of Infinite Atoms, out of which, not only  
Worlds already made received their sustenance,

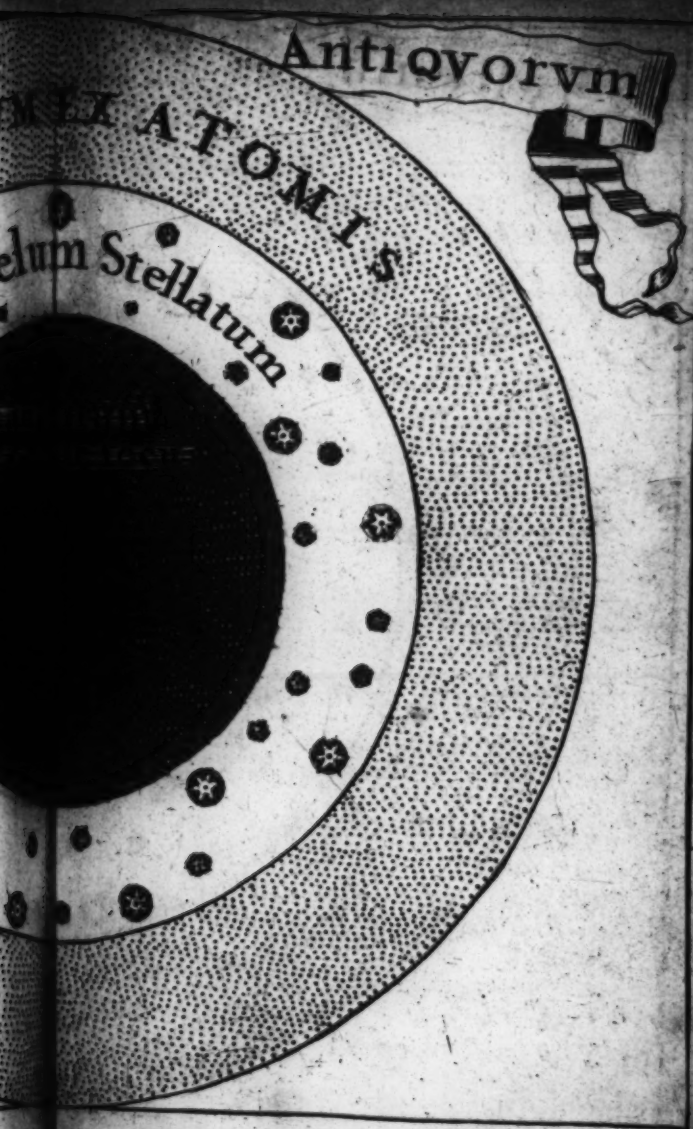


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12 Signs, 30  
rus, Gemini  
d the Northern  
Aquarius,

ones were produced : Which Cosmical System  
 joined by the Ancients, is thus described, as may  
 be seen in the said System. First, The place of the  
 Planets and the Earth : Then the Starry Firmament,  
 marked A, B, C, D, embracing within its Circumfe-  
 rence the Planetary and Elementary System, beyond  
 which a certain infinite Chaos of Atoms, in which  
 our World of ours is supposed to float, which Scheme  
 is taken from *Scheinerus*.

### *A Description of the Material Sphere.*

The Poles of the World are two fixed Points in the  
 Heavens, Diametrically opposite to one another ; the  
 one visible in our Hemisphere called the Artick Pole ;  
 the other not seen of us, being in the lower Hemi-  
 sphere, called the South or Antartick Pole.

The Axis of the World is an imaginary Line drawn  
 from Pole to Pole, about which the Diurnal motion  
 is performed from East to West.

The Meridians are great Circles, concurring and  
 intersecting one another in the Poles of the World.

The Equinoctial is a great Circle, 90 Degrees di-  
 stant from the Poles of the World, cutting the Meri-  
 dians at right Angles, and dividing the World into  
 two equal parts, called the North and South Hemi-  
 sphere.

The Zodiac is a Zone, having eight Degrees on  
 each side of the Ecliptick, in which space the Planets  
 perform their Revolutions, divided and distinguished  
 into 12 Signs, 30 Degrees to each Sign ; as, *Aries*,  
*Taurus*, *Gemini*, *Cancer*, *Leo*, *Virgo*, which are  
 called the Northern Signs. *Libra*, *Scorpio*, *Sagitta-*  
*rius*, *Aquarius*, *Pisces*, called the Southern Signs.

The

The Ecliptick is a Circle in the midst of the diack, touching the Equinoctial in two opposite points of *Aries* and *Libra*.

The Colures are two Meridians dividing the Equinoctial and Ecliptick into two equal parts; one of these passes the Equinoctial points of *Aries* and *Libra*, and is called the Equinoctial Colure; the other by *Cancer* and *Capricorn*, called the Solstitial Colure.

The Poles of the Ecliptick are two points 23 Deg. 30 Min. distant from the Poles of the World.

The Tropicks are two small Circles parallel to the Equinoctial, and distant therefrom 23 Deg. 30 Min. limiting the Sun's greatest Declination.

The Northern Tropic is call'd the Tropic of *Cancer*, the Southern the Tropic of *Capricorn*.

The Polar Circles are two small Circles, parallel to the Equinoctial, and are distant from the Poles of the World 23 Deg. 30 Min.

That which is adjacent is called the Arctic Circle, and the other the Antarctic Circle.

The Zenith and Nadir are two Points diametrically opposite.

The Zenith is the vertical Point, or the Point directly over our heads.

The Nadir is directly opposite thereto.

The Horizon is a great Circle, 90 Deg. distant from the Zenith and Nadir, dividing the World into two equal parts, the upper and visible Hemisphere, and the lower and invisible.

### *Astronomical Definitions.*

The Meridian of a place, is that which passes through the Zenith and Nadir of the place.

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**Azimuths or Vertical Circles** are great Circles of the Sphere, concurring and intersecting each other in the Zenith and Nadir.

**Almicanters or Parallels of Latitude**, are small circles parallel to the Horizon, imagined to pass through every Degree and Minute of the Meridian, between the Zenith and Horizon.

**Parallels of Latitude or Declination**, are small circles parallel to the Equinoctial, they are called **Parallels of Declination**, in respect of the Sun or Stars in the Heavens, and **Parallels of Latitude**, in respect of any place upon the Earth.

The **Latitude of a place** is the height of the Pole above the Horizon, or the distance between the Zenith and Equinoctial.

The **Latitude of a Star** is the Arch of a Circle, contained between the Center of a Star and the Ecliptick Line, making right Angles with the Ecliptick, and is counted either Northward or Southward, according to the situation of the Star.

**Longitude on the Earth**, is measured by an Arch of the Equinoctial, contained between the Primary Meridian (or Meridian of that place where the Longitude is assigned to begin, ) and the Meridian of any other place counted always Easterly.

The **Longitude of a Star**, is that part of the Ecliptick, which is contained between the Stars place in the Ecliptick and the beginning of *Aries*, counting according to the succession of the Signs.

**Altitude of the Sun or Stars** is the Arch of an Azimuth, contained betwixt the Horizon and Center of the Sun or Star.

**Ascension** is the rising of any Star or any part of the Equinoctial above the Horizon.

**Descension** is the setting thereof.

Right

**Right Ascension** is the number of Degrees Minutes of the Equinoctial (counted from the beginning of *Aries*,) which cometh to the Meridian of the Sun or Stars, or with any portion of the Ecliptick.

**Oblique Ascension** is an Arch of the Equinoctial between the beginning of *Aries* and that part of Equinoctial that riseth with the Center of a Star, with any portion of the Ecliptick in an Oblique Sphere.

**Oblique Descension**, is that part of the Equinoctial which setteth therewith.



**Ascensional Difference** is an Arch of the Equinoctial, being the difference between the right oblique Ascension.

**The Amplitude** of the Sun or Star is an Arch of the Horizon, intercepted between the rising or setting of the Sun or Star, and the East or West point of the Horizon.

**The Parallax** is the difference between the true and apparent place of the Sun or Star.

**Refraction** is caused by the Atmosphere, or various thickness of the Air, near the Earths Surface whereby the Sun and Stars seem always to rise sooner and set later, than in reality they do.

### *The Use of the Table of New and Full Moons*

On the left side of the Table you have each Month in the Year; and on the head of the Table you have the Years of our Lord, and the Characters of New and Full Moons; the New Moon is thus , the Full Moon thus . The Use of which will appear plainly by this Example.

I would know the time of the New and Full Moons

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Table

Mon	1716	1717	1718	1719	1720	1721	1722	1723	1724	1725	1726	1727	1728
Jan	12	<sup>1</sup> 31	20	9	28	17	6	25	14	3	22	11	30
Feb	11	0	19	8	27	16	5	24	13	2	21	10	29
Mar	12	<sup>1</sup> 31	20	9	28	17	6	25	14	3	22	11	30
Apr	11	<sup>1</sup> 30	19	8	27	16	5	24	13	2	21	10	29
May	10	29	18	7	26	15	4	23	12	<sup>1</sup> 30	20	9	28
Jun	9	28	17	6	25	14	3	22	11	30	19	8	27
Jul	8	27	16	5	24	13	2	21	10	29	18	7	26
Aug	7	26	15	4	23	12	1	20	9	28	17	6	25
Sep	5	24	13	2	21	10	29	18	7	26	15	4	23
Oct	5	24	13	2	21	10	29	18	7	26	15	4	23
Nov	3	22	11	<sup>1</sup> 30	19	8	27	16	5	24	13	2	21
Dec	3	22	11	<sup>1</sup> 30	19	8	27	16	5	24	13	2	21

Mon	1701	1702	1703
Jan	28	17	6
Feb	27	16	5
Mar	28	17	6
Apr	27	16	5
May	26	15	4
Jun	25	14	3
Jul	24	13	2
Aug	23	12	1
Sep	21	10	29
Oct	21	10	29
Nov	19	8	27
Dec	19	8	27



## Table of the New Moons

	1701	1702	1703	1704	1705	1706	1707	1708	1709	1710	1711	1712	1713	1714	1715
Jan	28	17	6	25	14	3	22	11	30	18	7	26	15	4	23
Feb	27	16	5	24	13	2	21	10	29	17	6	25	14	3	22
Mar	28	17	6	25	14	3	22	11	<sup>1</sup> 30	18	7	26	15	4	23
Apr	27	16	5	24	13	2	21	10	29	17	6	25	14	3	22
May	26	15	4	23	12	<sup>1</sup> 30	20	9	28	16	5	24	13	2	21
Jun	25	14	3	22	11	30	19	8	27	15	4	23	12	1	19
Jul	24	13	2	21	10	29	18	7	26	14	3	22	11	30	19
Aug	23	12	1	20	9	28	17	6	25	13	2	21	10	29	18
Sep	21	10	29	18	7	26	15	4	23	11	30	19	8	27	16
Oct	21	10	29	18	7	26	15	4	23	11	30	19	8	27	16
Nov	19	8	27	16	5	24	13	2	21	9	28	17	6	25	14
Dec	19	8	27	16	5	24	13	2	21	9	28	17	6	25	14

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for the Year 1680, therefore look at the head of the Table, and on the left side for the Month of *May*, and in the common Angle of meeting you will find that is New Moon the 18th Day, and Full Moon the 1st Day; so from the Full and Change you may compute any other Day of her Age. And if you could know the time of High Water at *London*, (or any other place contained in the Table) then look the day of her Age on the left side of the Table, (as you are before directed) and right against it you will find the time of High Water.

*The Use of the Circular Table, marked at the Corner with the Figure 1.*

This Table sheweth the Dominical Letter, Cycle of the Sun, Epact, and Golden Number, for 56 years, from the Year 1676.

For finding the Dominical Letter, and Cycle of the Sun, you are first to seek the Year of the Lord in the two outermost Circles; and in the two next Circles within those Circles, you have the Dominical Letter, and the number of the Suns Cycle.

*For Example.*

If you would know, in the Years 1700, and 1728, what the Dominical Letter, and Cycle of the Sun is; you will find the Dominical Letter to be G F, which doth denote it to be Leap-Year, and the Cycle of the Sun to be 1. And if you would find the Epact, and Golden Number, for any Year contained in the Table, then find the Years required in the 5th and 6th Circles, and in the Innermost Circles you will have what you desire; as for the Years 1681, and 1700, you will find the Epact to be 2, and the Golden Number to be 10.

G

And

And here I think it necessary to shew the reason of these Numbers and Letters.

### *Of the Prime, or Golden Number.*

The Prime, or Golden Number, is a Circle, Revolution of 19 Years ; in which space of time was supposed by the Ancients, that all the Lunations and Aspects between the Sun and Moon, did return to the same place they were 19 Years before : It is chiefly to find the Change, Full, and Quarter of the Moon.

### *Of the Cycle of the Sun, and Dominical Letters.*

The Cycle, or Circle of the Sun, is a Revolutions Number of 28 Years ; in which space of time there is a perfect change of all the Sunday Letters every Year, and maketh its Periodical Revolution 28 Years. By help of which is known the true order of the Sunday Letter, A, being placed against the first day of *January*, and the rest in their order to the Years end : And every Month beginneth with the Letter of each word in this short Distich ;

*At Dover Dwells George Brown Esquire,  
Good Christopher Finch, And David Frier.*

### *Of the Epact.*

The Epact is a Number not exceeding 30, between the Moon, between Change and Change, never exceeds 30 Days ; and thereby the common Lunar Year, consisting of 12 Months, is less than the Solar Year by 11 Days ; for to every Lunar Month is

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ar contains 354 Days, and the Solar Year con-  
s of 365 Days ; the difference is 11 Days, which  
alled the Epact.

*Short Rules to find the Golden Number, Domi-  
nical Letter, Epact, &c. in short Distichs.*

To know if it be Leap-Year, or what Year past.

*Divide the Year by 4, what's left shall be  
For Leap-Year 0. for past 1, 2, or 3.*

*Example.*

Anno 1680, divide only the latter part of this  
umber, which is 80, by 4, and there remains 0,  
ch shews it to be Leap-Year.

*To find the Dominical, or Sunday Letter.*

*Divide the Year, its 4th, and 4 by 7,  
What's left subtract from 7, the Letter's given,*

A. 1. B. 2. C. 3. D. 4. E. 5. F. 6. G. 7.

*Example.*

Year of our Lord	1680
fourth	420
both which, add	4

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ing divided by 7, the remainder is 4 ; and accord-  
to the order of the standing of the Letters, it  
G 2 shews

shews it to be D, which is the first of the Dominical Letters for that Year, (which is Leap-Year) which continues until the 24th of February, (St. Matthias day) and the other Letter is C, which serves all the Year after, accounting the Letters backward.

*To find the Golden Number, Cycle of the Sun and Indiction.*

*When 1, 9, 3. to th' Year hath added been,  
Divide by 19, 28, 15.*

*Example.*

To 1680 add 1, which is 1681: divide that by 19, and there remains 9, which is the Golden Number for that Year. Again to 1680 add 9, and the Sum is 1689; divide by 28, the residue is 9, the Cycle of the Sun for that Year. Lastly, To 1680 add 3, the Sum is 1683; which being divided by 15, the remainder is 3, which is the Indiction for the same Year.

*The Prime and Golden Number being given,  
find the Epact.*

*Divide by 3, for each one left add 10,  
30 reject; the Prime makes Epact then.*

*Example.*

Anno 1680 the Golden Number is 9, which divided by 3, and there remains 0; therefore ten times 0, which added to 9, the Epact for the Year 1680.

By the 19  
Limit from

The Epact  
The greatest

Anno 1680  
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Year; which  
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Easter-Limit  
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By the 19 Epacts, to find the day of Easter-Limit from the beginning of March inclusively.

The Epacts take from 47 but two,  
The greatest take from 77, 'twil do.

*Example.*

Anno 1680 the Epact being 9, subtract it from 47, there remains 38, which is Easter-Limit for the same Year; which reckoned from the beginning of March inclusively, it will fall on April the 7th.

But when the Epact is 28, or 29, it must be subtracted from 77, that so the Limit may remain, and the next following Sunday after the Limit is always Easter day.

Easter-Limit, and the Dominical Letter being given; to find Easter-day.

The Letter more by 4 from Limit take,  
What's left from nearest sevens, shall Easter make.

Or thus;

Take the Number of the given Letter more by 4 from the given Limit, and the residue from the greatest Sum of sevens, the last remainder added to the Limit (the Sum) or its excess above 31, is Easter-day in March or April.

*Example.*

Anno 1680, the Letter C, which is 3, more by 4, 7; which taken from the Limit 38, the residue is 31; this taken from the nearest greater Sum of sevens the Limit, viz. 35, there remains 4; which added to the Limit 38, the Sum is 42; the excess of which above





*To find the Age of the Moon, or the Day of Her Change.*

*Janu.* 0, 1, 2, 3, 4, 5, 6,

8, 8, 10, 10, *these to the Epact fix.*

*The sum (bare 30) to the Month-day add,*

*Or take from 30, Age or Change is had.*

*Which is thus Explained.*

*Add to the Epact,*

*Jan. Feb. Mar. Apr. Ma. Jun. Jul. Aug. Sep. Oct. Nov. Dec.*

0. 2. 1. 2. 3. 4. 5. 6. 8. 8. 10. 10.

When the Epact is added to any of these Numbers, the Sum, if it be less than 30, or the Excess above 30, added to the day of the given Month, (rejecting, if need be) gives the Age of the Moon that day; but subtracted from 30, leaves the day of the Change in (or from the beginning of) that Month.

For the day of the Full Moon, add or subtract 15 (or from the day of the Change).

*Example.*

(1.) For the Age of the Moon on the 11th of May 1680, the Number of the Month is 3, added to Epact 9, makes 12; which added to 10, makes the Age of the Moon required.

(2.) For the day of the Change, (or New Moon) May 1680, the Epact 9, with the Figure 3, makes (as before); which subtracted from 30, there is 18, on which day is the Moons Change, (or New Moon) in May 1680.

(3.) For the day of the Full Moon, take 15 from there remains 3, which is the day of the Full Moon in that Month.

*To*

*To find the Hour of the Moons coming to South  
and High-Water at London.*

*The Moons Age multiply by 4 ; divide  
By 5 for southing ; add 3 for the Tyde.*

*Example.*

If on the 10th of May 1680, the Moon is 10 days  
old ; which being multiplied by 4, makes 40, and  
divided by 5, the Quotient is 8, which is the time  
of the Moons southing in the Morning, because  
the Moon is past the Full ; to which if you add 3  
makes 11, which shews the time of High-Water at  
London.

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*The use of the Almanack in Lines, Entitled  
( An Almanack shewing the Day of  
Month, Suns Place, Right Ascension  
Declination for ever. )*

**T**HE Margin on the left side sheweth the  
Declination for every day in the Year, direct-  
ing your Eye from any of the Month requir-

*As for Example.*

If it should be required to know what Declina-  
tion the Sun hath on the 25th day of October ; which  
you will find in the second Column, and right against  
the 15th day, the Declination to be about 15 Degrees  
and you may well determine it to be South Direct

tion, because  
Equinoctial,  
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tion, because the Sun is then to the southward of the Equinoctial, being after the 13th day of *September*; from which time, to the 10th of *March* following, the Sun hath all that time South Declination. And if you would know the Suns Place for the same day, observe this direction following.

### *To find the Sun's Place.*

Suppose the Sun's Place were required on the aforesaid day, viz. the 25th of *October*: direct your eye from the said day, to the next Column on the right hand, and you will find the Sun's Place to be in 15 Degrees of *Scorpio*. And if you would know the Suns Right Ascension that day, in time observe these following Directions.

### *To find the Suns Right Ascension in Hours.*

Suppose it were required to find the Suns Right Ascension (converted into Hours) for the aforesaid day of *October*; which in the 4th Column you will find, right against the said day, to be 15 hours. The same way and order is to be observed in all the rest of the Months for any of the forementioned requisites.

### *The Use of the Perpetual Almanack.*

This Almanack is contained in this short Distich;

*At Dover Dwells George Brown Esquire,  
Good Christopher Finch, And David Frier.*

which Verse, with the help of the Dominical Letter,  
H ter,

ter, you may find the day of the Month, for any time past, present, or to come ; the use of which Table and Verse are here-under shewed.

*The Use of the Tables of the Dominical Letters and their Application, for finding the day of the Month by the help of the aforesaid Distich.*

First therefore observe, That all those Years expressed in the Tables, are all Leap-Years ; as the Years 1000, 1200, 1400, 1600, &c. and so of the rest, which are all Leap-Years, and have each of them two Dominical Letters, as you may see in the respective Columns over their heads ; as for the Year 1000, the Dominical Letters were G F, and so of the rest. The other Figures also, as 20, 24, 32, &c. are all Leap-Years ; the use of which is thus explained.

First, Suppose the Dominical Letter is required for the Year 1632 ; look for 1600 in one of the Columns, and in another Column for 32 ; and on the head of the said Column, you will find it is the Year, and the *Dominical Letters* to be A G.

Secondly, Suppose you would know the *Dominical Letter* for the Year 1681 : Look in the Table for which you find not there ; Therefore look for the Year before, which is 80, and that is *Leap-Year* and the *Dominical Letters* are D C. Now C being the *Dominical Letter* for the latter part of the Year 1680. The next Letter before it, in the Alphabetical order is B, which is the *Dominical Letter* for the next Year 1681, Which Letter you will find on the top of the next Column, where you will find the

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er B, with the Figure of 1 by it, which informs you  
that it is the first after *Leap-Year*. And so for the  
year 1682, the *Dominical Letter* is A, and the se-  
cond after *Leap-Year*; the same is to be understood  
the rest. Thus having found the *Dominical Letter*,  
the day of the Month may be found by these following  
directions.

find the Day of the Month of the fore-menti-  
oned Distich, with the help of the Dominical  
Letters found in the Table.

For the finding the day of the Month by that short  
 erse, you are to take notice, That the first Letter  
 each word, is the same Week-day Letter that al-  
 ways beginneth the Month : as A always beginneth  
 January, and so of the rest, as you may see in any  
 Almanack, according to that order as you see in the  
 Distich : All which will be sufficiently explained in

*Example.*

The first Sunday in *June*, in the Year 1681, I could know what day of the Month it is for that Year; I find B is the *Domical Letter*, and by the which you find the Letter E begins the Month of *June*; therefore count on in the natural order of the Alphabet, from E until you come to B, which is Sunday, thus, E one, F two, G three, A four, B five, which is Sunday, and the 15th day of the Month.

*Example 2.*

I would know what day of the Month the first *Thursday* of *July* is in the Year 1681, the *Dominical* letter being B. I find by the Verse that *July* begins the Month with G; therefore I say, G one, A two, H 2 B three,

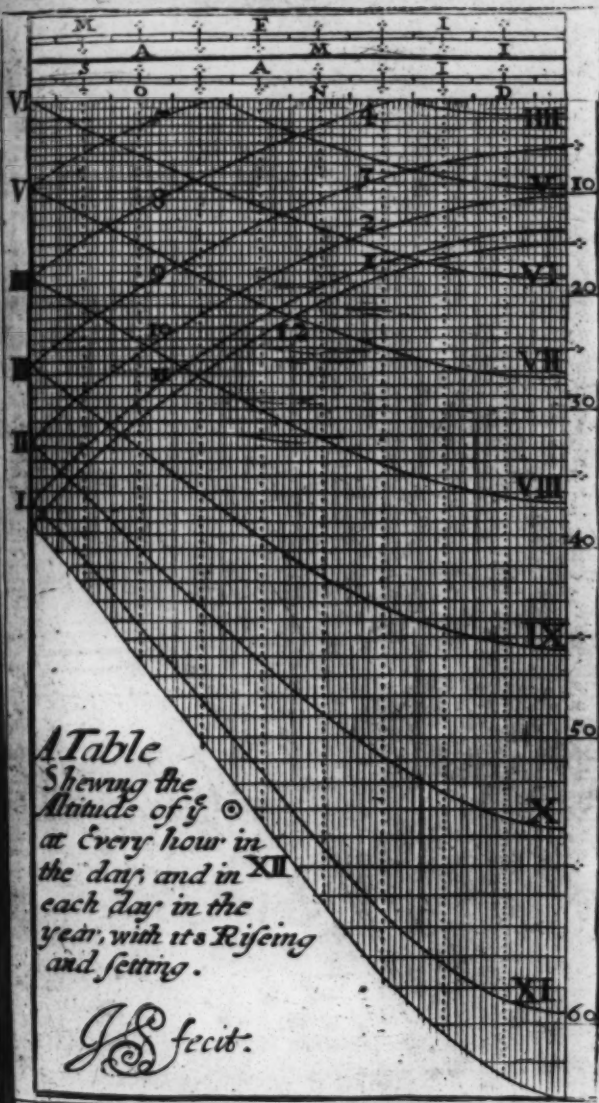
B three, ( which is *Sunday* ) C therefore is *Monday*, D *Tuesday*, E *Wednesday*, F *Thursday*, which is given in number from G, ( including it ) and therefore is the 7th day of the Month on which the *Thursday* falls on. The Month begins with a *Friday* and so you may cast your Eye down to a small Table on the bottom of the said Almanack; and there you may take notice, that the first row of Figures on the head of the Table, is 1. 8. 15. 22. 29; which you may reckon to be always the same days of the Week that the Month begins with; as if the Month begins with a *Sunday*, then the first row are all *Sundays*, and the second row all *Mondays*, the third row all *Tuesdays*, and so on. As for instance, The Month of *July*, in the Year 1681, begins on a *Friday*, then the upper row are all *Fridays*, and the second row *Saturdays*, &c. So also you may say, *Friday* and *Friday* is 8, and *Friday* is 15, and *Friday* is 22, and *Friday* is 29, &c. So after these Rules and Directions, you may always find the day of the Month at any time, both past, present, and to come.

Upon the same Print of the *Perpetual Almanack* you have also some other small Tables; one sheweth the time of High-Water at *London-Bridge* any day of the Moons Age. Another sheweth the Moons Age when she is coming to the South at any day of her Age; by help of which you may know the time of High-Water at *London* or elsewhere, where the time of Flowing is known, at the Full and Change days. The third Table sheweth the Moons Age for her shining. The Use of each Table shall be explained in these following Directions.

A Table  
Shewing  
Altitude  
at Every  
the days  
each day  
year, with  
and set

J. S.





By having the  
High Water

The Moon  
other Tables  
ing known, f  
small Table,  
you will find  
Bridge.

If the Moon  
is High-Water  
seek the Moon  
against it you  
is High-Water

To find the

First you must  
and then seek  
right against  
der the title of  
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Full, the Moon  
but from the

When the Moon  
time of her course  
your Eye on  
will find 4 48  
South at 4 a C

*By having the Moons Age, to find the time of High Water at London-Bridge.*

The Moons Age must be first known from some other Tables in the Book, or else-where; which being known, find the day thereof in the fore-mentioned small Table, and right against it, on the left hand, you will find the time of High-Water at *London-Bridge*.

*As for Example.*

If the Moon be six days old, I would know when it is High-Water at *London-Bridge*. Therefore first seek the Moons Age 6 in its proper Table, and right against it you will find 7. 48 which shews that it is High-Water at 7 a Clock and 48 Minutes past.

*To find the Moons Southing any day of her Age.*

First you must look the Age of the Moon as before, and then seek the same in the Table of her Age, and right against it, in the Table on the right hand, under the title of *Moons Southing*, you will have your desire. And here note. That from the New to the Full, the Moon cometh to South in the Afternoon; but from the Full to the New in the Morning.

*As for Example.*

When the Moon is six days old, I would know the time of her coming to South. Therefore if you cast your Eye on the Table of the *Moons Southing*, you will find 4 48. which shews that the Moon cometh to South at 4 a Clock and 48 Minutes past.

*The*

*The Use of these Tables for finding the time of the Moons Shining.*

To know how long the Moon shineth, enter the Column of the Moons Age for her shining, and against it on the left hand you have the time of her shining: which all the time of her Encrease being added to the hour of Suns Rising, gives the time of her Rising; but if added to the time of Suns Setting, gives the time of her Setting; but after the Full, the time of her shining from the Suns Rising, and gives her Rising; and then take the same from the Suns Setting, and it gives the time of her Setting.

*Example.*

In the Year 1680 *October* the 5th, the Moon is 24 days old. Which number find in the Table, and you will see that right against it there is 6 Hours 24 Minutes for the time of her shining; which being added to the Suns rising of the same day, which is 6 Hours 4 Minutes, makes 13 Hours 32 Minutes; from which take 12, and there rests 1 Hour 32 Minutes, which is the time of the Moons Rising the next Morning.

Again, to the same 6 Hours 24 Minutes, add Hours 14 Minutes (the Suns Setting) and it gives 11 Hours 38 Minutes for the time of her Setting the next day a little before Noon.

*To find the Hour of the Night by the shadow of the Moon upon a Sun-Dial, by the help of the Table of the Moons Southing.*

Observe on a Sun-Dial what hour the shadow

the Moon fall  
shadow doth  
upon the D  
past the time

Suppose t  
by the Tab  
of the Clock  
should fall on  
12, and the  
which is 6 of

But if the s  
the Dial, the  
Moons comin  
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And Note  
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Night, as the

*The Use of  
and Moon*

This Table  
tion only; l  
In the Year  
the Moon wil  
which is 22 h  
morning, and  
5 Minutes.

the Moon falls upon, and take notice how much the shadow doth either lack or is past the Hour of 12 upon the Dial, for so much it doth want of, or is past the time of the Moons coming to South.

*Example.*

Suppose the Moon were ten days old ; you find (by the Table ) that the Moon cometh to South at 9 of the Clock. Now suppose the shadow of the Moon should fall on the Hour of 10, this wants 2 Hours of 12, and therefore it wants two Hours of eight, which is 6 of the Clock in the Evening.

But if the shadow of the Moon had been at 2 upon the Dial, then you must have added 2 Hours to the Moons coming to South, then would it be 10 of the Clock at Night.

And Note ; When the Moon is in the Full, then the shadow of the Moon shews the true Hour of the Night, as the shadow of the Sun doth by Day.

*The Use of the Table of the Eclipses of the Sun and Moon.*

This Table is sufficiently plain of it self by inspection only ; but however I shall give one Example.

In the Year 1681, the 28 of *August*, you will find the Moon will be Eclipsed at 14 Hours 22 Minutes, which is 22 Minutes past two of the Clock next morning, and the quantity eclipsed will be 10 Digits 5 Minutes.

*The*

*The Use of the Perpetual Table for finding the  
Break of Day, Suns Rising, Planetary Hours  
both by Night and Day in the Latitude of  
London, every 10th Day in the Month.*

In the first Column you have the 12 Months of the Year ; in the second, 1, 11, and 22 Days of the Month ; in the third the Break of Day, which on the 11th of *February* is at 5 of the Clock ; in the fourth is the time of Twilight, which against the said 11th of *February*, is at 7 of the Clock, which is the time of the ending of Twilight in the Evening ; in the 5th and 6th Columns, the Rising and Setting of the Sun ; in the 7th and 8th Columns, the length of the Day and Night ; and in the 9th and 10th Columns, the length of the Planetary Hours both by Night and Day.

*The Use of the Table of the Essential Dignities  
of the Planets.*

Every Planet hath two Signs for his Houses, except ☉ and ♄, they have but one apiece ; ♀ hath ♀ and ☿ ; ♃ hath ♃ and ♁ ; ♅ hath ♅ and ♁ ; ♁ hath ♁ ; ♄ hath ♄, &c. One of these Houses is called *Diurnal*, noted with the letter D ; the other is *Nocturnal*, noted by the letter N. In these Signs the Planets have their Exaltations, which are noted in the third Column ; as the ☉ in the 19 ♍. ♄ in the 3 ♏. ♃ in ♐ 3 Degrees, &c. are exalted.

These 12 Signs are divided into four Triplicities ; the 4th Column tells you what Planet, or Planets both Night and Day governs each Triplicity ; as

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**A Table shewing the true Hour of the day by a  
Staff, divided into 10 equal parts**

| Ho. befor en<br>Ho. after noon |    | 12 | 11   | 10   | 9    | 8    | 7    | 6    |
|--------------------------------|----|----|------|------|------|------|------|------|
|                                |    |    | 1    | 2    | 3    | 4    | 5    | 6    |
| Jan.                           | II | II | 5 b  | 6    | 7 b  | 9 c  | 13 b | 19 a |
| I                              | 21 | 21 | 5 b  | 6    | 7 b  | 10   | 13 c | 19 b |
| Feb.                           | 21 | 2  | 5 c  | 6 b  | 7 c  | 10 a | 14   | 20 a |
| II                             | 13 | 13 | 6 a  | 6 c  | 8 a  | 10 c | 14 c | 21 b |
| 30                             | 23 | 23 | 7    | 7 b  | 9    | 11 b | 16   | 23   |
| 20                             | 2  | 2  | 7 c  | 8 a  | 10   | 12 c | 17 b | 26 b |
| 9                              | 13 | 13 | 8 c  | 9 a  | 11   | 14   | 19 b | 30   |
| 30                             | 23 | 23 | 10   | 10 b | 12 a | 15 c | 22 a | 36 b |
| 20                             | 2  | 2  | 11 a | 12   | 14   | 18   | 26   | 46   |
| 10                             | 13 | 13 | 13   | 13 c | 16   | 21   | 31 a | 62 c |
| 28                             | 22 | 22 | 15   | 16   | 18 c | 24 c | 39   | 97 a |
| 18                             | 3  | 3  | 17 b | 18 b | 22   | 29 c | 51   | 210  |
| 8                              | 13 | 13 | 20 b | 21 c | 26   | 36   | 70 c |      |
| 29                             | 23 | 23 | 24   | 25 b | 31   | 46   | 110  |      |
| 19                             | 2  | 2  | 28   | 29 c | 37   | 59   | 208  |      |
| 9                              | II | II | 32   | 34 b | 44   | 76   | 229  |      |
| 30                             | 21 | 21 | 36   | 39   | 51   | 97   |      |      |
| 21                             | I  | I  | 39   | 42 b | 56 b | 117  |      |      |
| II                             | II | II | 40   | 43 c | 59   | 126  |      |      |

*To find the hour of the day by this Table:*

Take a Staff of what length you please, and (with a *Fluxus* passe) divide it into 10 equal parts, marking them upon the Staff, then in some plain level place, where the Sun doth shine at right, and mark where the end of the shadow thereof shall be done, measure with your Staff, the length of the shadow and the parts it contains, which find out in this Table, against the day of the Month, and over head, you have the true hour of the day.

Suppose the 9 of April or 13 of August, I should find the shadow of the Staff to be 30 partes and a quarter (that is three Staff lengths and a quarter) therefore looking in the Table against the said day over-head, that it is then either 7 a clock in the morning or afternoon so that if your observation was in the morning it is 7 but if in the after noon, 5 a clock:

By this Example, you may see the ease, and excellent use of the Table, which is as ready as any movable Sun-Dial: so that wheresoever you are or travell, you may (having this Book about you) speedily know the true

*A Perpetual  
Hour, etc*

|       | Hour<br>of day |
|-------|----------------|
| Jan.  | 15. 55         |
| Feb.  | 11. 5. 4       |
| Mar.  | 11. 5. 35      |
| Apr.  | 15. 12         |
| May   | 11. 5. 0       |
| June  | 11. 4. 45      |
| July  | 14. 20         |
| Aug.  | 11. 3. 59      |
| Sept. | 11. 3. 54      |
| Oct.  | 13. 55         |
| Nov.  | 11. 2. 38      |
| Dec.  | 11. 2. 2       |
| Day   | 11. 50         |
| 11    | 11. 50         |
| 12    | 11. 50         |
| 13    | 11. 50         |
| 14    | 11. 50         |
| 15    | 11. 50         |
| 16    | 11. 50         |
| 17    | 11. 50         |
| 18    | 11. 50         |
| 19    | 11. 50         |
| 20    | 11. 50         |
| 21    | 11. 50         |
| 22    | 11. 50         |
| 23    | 11. 50         |
| 24    | 11. 50         |
| 25    | 11. 50         |
| 26    | 11. 50         |
| 27    | 11. 50         |
| 28    | 11. 50         |
| 29    | 11. 50         |
| 30    | 11. 50         |

*Perpetual Table of Break of day: Sun rise, planetary  
hour, etc. in the Latitude of London*

|           | Break<br>of day | Twilight | sun<br>rise | sun<br>set | long<br>day | long<br>night | H<br>by D. | H<br>by N. |      |
|-----------|-----------------|----------|-------------|------------|-------------|---------------|------------|------------|------|
|           | m               | m        | m           | m          | m           | m             | m          | m          |      |
| Jan       | 15.54           | 6.6      | 8.23        | 58         | 7.56        | 16.4          | 0.40       | 1.20       |      |
|           | 15.4            | 6.18     | 7.49        | 4.11       | 8.22        | 15.38         | 0.42       | 1.18       |      |
|           | 15.35           | 6.25     | 7.39        | 4.26       | 8.52        | 15.8          | 0.44       | 1.16       |      |
|           | 15.17           | 6.43     | 7.17        | 4.45       | 9.26        | 14.34         | 0.47       | 1.13       |      |
| Feb       | 11.5.0          | 7.0      | 6.59        | 5.10       | 10.32       | 13.58         | 0.50       | 1.10       |      |
|           | 11.4.45         | 7.15     | 6.47        | 5.18       | 10.56       | 13.24         | 0.54       | 1.6        |      |
|           | 11.4.30         | 7.40     | 6.23        | 5.37       | 11.14       | 12.46         | 0.56       | 1.4        |      |
| Mar       | 11.3.59         | 8.1      | 6.06        | 6.012      | 0.12        | 0.12          | 1.0        | 1.0        |      |
|           | 11.3.54         | 8.27     | 5.42        | 6.18       | 12.36       | 11.24         | 1.3        | 0.57       |      |
|           | 11.3.55         | 8.55     | 5.20        | 6.40       | 13.20       | 10.40         | 1.7        | 0.55       |      |
| April     | 11.2.38         | 9.22     | 4.58        | 7.214      | 4.9.56      | 1.10          | 0.50       |            |      |
|           | 11.2.2          | 9.58     | 4.40        | 7.20       | 4.40        | 9.20          | 1.13       | 0.47       |      |
|           | 11.1.30         | 1.30     | 4.22        | 7.38       | 15.10       | 8.44          | 1.16       | 0.44       |      |
| May       | 11.0.30         | 11.30    | 3.08        | 5.11       | 15.42       | 8.18          | 1.18       | 0.42       |      |
|           | 11.0.           | All      | No          | 3.55       | 8.51        | 16.10         | 7.50       | 1.20       | 0.40 |
|           | 1 day           | night    |             | 5.50       | 8.10        | 16.20         | 7.40       | 1.21       | 0.39 |
| June      | 11 and          | but      |             | 5.57       | 8.3.16      | 26.7.3        | 1.21       | 0.39       |      |
|           | 11 not          | Twilight |             | 5.50       | 8.10        | 16.20         | 7.40       | 1.22       | 0.38 |
|           | 1 Night         | light    |             | 5.57       | 8.3.16      | 6.7.54        | 1.20       | 0.40       |      |
| July      | 11.0.42         | 11.18    | 4.97        | 5.15       | 15.42       | 8.18          | 1.18       | 0.4        |      |
|           | 11.1.22         | 10.38    | 4.21        | 7.39       | 15.18       | 8.42          | 1.16       | 0.44       |      |
|           | 11.1.0          | 10.0     | 4.39        | 7.21       | 14.42       | 6.18          | 1.14       | 0.46       |      |
| August    | 11.1.21         | 9.39     | 4.58        | 7.214      | 4.6.56      | 1.10          | 0.50       |            |      |
|           | 11.3.0          | 9.0      | 5.16        | 6.44       | 13.28       | 10.32         | 1.7        | 0.53       |      |
|           | 11.3.30         | 8.30     | 5.35        | 6.25       | 13.46       | 11.14         | 1.3        | 0.57       |      |
| September | 11.3.59         | 8.1      | 5.56        | 6.412      | 8.11.52     | 1.0           | 1.0        |            |      |
|           | 11.4.19         | 7.41     | 6.16        | 5.44       | 11.28       | 12.32         | 1.57       | 1.3        |      |
|           | 11.4.48         | 7.12     | 6.36        | 5.24       | 10.48       | 13.12         | 0.54       | 1.6        |      |
| October   | 11.5.0          | 7.0      | 6.56        | 5.410      | 8.13.52     | 0.50          | 1.10       |            |      |
|           | 11.5.18         | 6.42     | 7.15        | 4.45       | 9.50        | 14.30         | 0.47       | 1.13       |      |
|           | 11.5.37         | 6.27     | 7.34        | 4.26       | 8.52        | 15.8          | 0.44       | 1.16       |      |
| November  | 11.5.45         | 6.17     | 7.49        | 4.11       | 8.22        | 15.38         | 0.42       | 1.18       |      |
|           | 11.5.34         | 6.6      | 8.13        | 3.59       | 7.58        | 16.4          | 0.40       | 1.20       |      |
|           | 11.5.37         | 6.3      | 8.10        | 3.50       | 7.46        | 16.20         | 0.39       | 1.21       |      |
| December  | 11.6.0          | 6.0      | 8.13        | 3.47       | 7.34        | 16.26         | 0.38       | 1.22       |      |
|           | 11.5.8          | 6.2      | 8.8         | 3.52       | 7.44        | 16.16         | 0.39       | 1.21       |      |





|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |     |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|

*The hours of y<sup>e</sup> Day.*

[illegible]

*the hours of 4 Night.*

|    |   |   |   |   |   |   |   |
|----|---|---|---|---|---|---|---|
| 1  | ㇿ | ㇸ | ㇹ | ㇺ | ㇻ | ㇼ | ㇽ |
| 2  | ㇾ | ㇷ | ㇶ | ㇵ | ㇴ | ㇳ | ㇲ |
| 3  | ㇱ | ㇰ | ㇯ | ㇮ | ㇭ | ㇬ | ㇫ |
| 4  | ㇪ | ㇩ | ㇨ | ㇧ | ㇦ | ㇤ | ㇣ |
| 5  | ㇡ | ㇠ | ㇟ | ㇞ | ㇝ | ㇜ | ㇛ |
| 6  | ㇚ | ㇙ | ㇘ | ㇗ | ㇖ | ㇕ | ㇔ |
| 7  | ㇓ | ㇒ | ㇑ | ㇐ | ㇏ | ㇎ | ㇍ |
| 8  | ㇋ | ㇊ | ㇉ | ㇈ | ㇇ | ㇆ | ㇅ |
| 9  | ㇄ | ㇃ | ㇂ | ㇁ | ㇀ | ㇀ | ㇀ |
| 10 | ㇀ | ㇀ | ㇀ | ㇀ | ㇀ | ㇀ | ㇀ |
| 11 | ㇀ | ㇀ | ㇀ | ㇀ | ㇀ | ㇀ | ㇀ |
| 12 | ㇀ | ㇀ | ㇀ | ㇀ | ㇀ | ㇀ | ㇀ |

Note that to every day in the week there is appropriated a several Planet, as © to Sunday, Mars Monday & Tuesday: &c. & therefore each planet governs of five hours, by this Table you may perceive that if you govern of five hours after sun rising or landing of a vessel, & should be Mars governs of four planets, namely, Mars, & to one of the planets, & so of the night, if you govern of five hours, & so on, & you may direct in the same Column, & find out the day of a gift.



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against  $\gamma$ .  $\Omega$ .  $\Gamma$ . you find  $\odot$ .  $\mathcal{W}$ . viz.  $\odot$  governeth  
 Day in that Triplicity. Over against  $\delta$   $\mathcal{M}$ .  $\mathcal{W}$ .  
 you find  $\text{♀}$  and  $\text{♂}$ ; viz. that  $\text{♀}$  hath domination by  
 Day, and  $\text{♂}$  by Night, in that Triplicity. Over a-  
 gainst  $\Pi$ .  $\sphericalangle$ .  $\sphericalangle$ . you find  $\text{♂}$ .  $\text{♀}$ . which rule as afore-  
 said. Over against  $\text{♄}$ .  $\mathcal{M}$ .  $\mathcal{X}$ . you find  $\text{♂}$ . which (ac-  
 cording to *Ptolomy*) ruleth only that Triplicity both  
 Day and Night. Over against  $\gamma$ , in the 5, 6, 7, 8, 9,  
 Columns, you find  $\mathcal{W}$  6.  $\text{♀}$  14. which tells you the  
 first 6 Degrees of  $\gamma$  are the terms of  $\mathcal{W}$ . from 6 to 14  
 the terms of  $\text{♀}$ , &c.

Over against  $\gamma$ , in the 10, 11, 12, Columns, you  
 find  $\text{♂}$  10.  $\odot$  20.  $\text{♀}$  30. viz. the first 10 Degrees of  
 $\gamma$  are the Face of  $\text{♂}$ ; from 10 to 20, the Face of  $\odot$ ;  
 from 20 to 30, the Face of  $\text{♀}$ , &c.

Over against  $\gamma$ , in the 13 Column, you find  $\text{♀}$  de-  
 triment; viz.  $\text{♀}$  being in  $\gamma$ , is in a Sign opposite  
 to one of her Houses, and so is said to be in her Detri-  
 ment.

Over against  $\gamma$  in the 14 Column, you find  $\text{♂}$ , and  
 over his head fall; that is,  $\text{♂}$  when he is in  $\gamma$ , op-  
 posite to  $\sphericalangle$  (his Exaltation) and so is infortunate, &c.

A Planet dignified as above-said, is said to be in  
 his Essential Dignity. Accidental Dignities are,  
 when Planets are casually in an Angle or succedent  
 House, direct free from combustion.

A Planet in his House or Exaltation, being signifi-  
 cant of any Person, denotes him to be in a happy and  
 prosperous Condition, not wanting for the Goods of  
 this Life.

A Planet debilitated, as being in detriment, or  
 fall, and afflicted, denotes the Querent to be in a  
 very low and mean Condition, much dejected and  
 disconsolate.

*The Use of the Table of the Planetary or Un-  
equal Hours for every Night and Day in  
Year.*

To find what Planetary Hour it is, and also what Planet reigneth that Hour.

You must learn at what Hour and Minute the Sun doth rise upon the day proposed; which you may find in each page of the Almanack, and also the true Hour of the Day at any time proposed: Then observe how many Hours and Minutes the said time is after Sun rising; the number of which Hours multiply by 60, and to the Product add the odd Minutes (if there be any) then the Aggregate divided by the number of minutes that a Planet reigneth, the Quotient will shew the number of a Planetary Hour.

*Example.*

Suppose that when the Sun riseth at 8 of the Clock, as upon *Saturday* the 8<sup>th</sup> of *January* it doth, and it be required to know what Planetary Hour it is at 11 a Clock before noon the same day; therefore because 11 a Clock is 3 hours after 8, the Sun's rising, multiply 3 by 60, and the Product is 180; which being divided by 40, (for so many minutes are in a Planetary Hour that day) the Quotient is 4 hours 30 minutes: Therefore you may conclude that there are 30 minutes spent of a Planetary Hour.

Having found what Planetary Hour it is, you would know what Planet doth reign that hour, thus;

Seek the day of the Week in the precedent Table, and the hour of the day on the top of the Table,

in the common  
Planet that go  
precedent Table  
Night, is the  
Night.

Upon the af  
is required  
Clock before N  
ing to the afor  
minutes spent  
ore first find A  
Table, then loo  
the common A  
the Governor t

*of the Prop  
Seven Pla*

Having now  
will be neces  
and Dispositio

h denotes in  
Country-men,  
X signifies  
Law, Religio  
J signifies  
Debate, Thef  
O signifies  
all degrees.  
Q denotes  
of Delights,

in the common Angle of Meeting you will find the Planet that governeth that hour : And in the other precedent Table on the right hand, which is for the Night, is the Planet that governeth the same Hour by Night.

*Example.*

Upon the aforefaid day, (the 8th of *January* 1681) is required to find what Planet reigneth at 11 a Clock before Noon the same day ; Therefore according to the aforefaid Rule, you may find there are 30 minutes spent of the fourth Planetary Hour ; therefore first find *Monday* on the side of the said precedent Table, then look for 4 in the head of the Table, and in the common Angle of Meeting you will find  $\delta$  to be the Governor that rules the 4th Hour of the same day.

*Of the Properties and Natural Effects of the Seven Planets.*

Having now shewed what Planet rules each Hour, it will be necessary to shew the Natures, Qualities, and Dispositions of them.

$\hbar$  denotes in general, Lands, Houses, Tenements, Country-men, Ancient People, &c.

$\Sigma$  signifies Judges, Senators, Divines, Riches, Law, Religion, &c.

$\delta$  signifies Souldiers, Physicians, War, Strife and Debate, Theft, and all manner of Cruelty, &c.

$\odot$  signifies Honour, Greatness, noble Persons of all degrees.

$\wp$  denotes Women, Pleasure, Pastimes. all kinds of Delights, Mirth, sweet Odours, &c.

Q denotes all kinds of Scribes or Secretaries, Mathematicians, Servants, &c.

D signifies Women in general, all common and vulgar Persons.

*The Use of the Table that sheweth the Altitude of the Sun every hour of the Day, and each day of the Year; with the Rising and Setting of the Sun.*

*The Description of the Table.*

The Months are on the head of the Table, each Month noted with the proper Letter belonging to that Month, as *J* for *January*, *F* for *February*, *M* for *March*, &c.

The Hour-lines that bend downward, are the Summer-hours, those that bend upward are the Winter-hours; the small Lines that fall perpendicularly between the Parallel Lines of the days of the Year.

Those that run thwait them at right Angles with these, are the Parallels of the Suns Altitudes, proceeding from the Tangent-Line on the right side of the Table.

The lower Line of the top Margent of the Table represents the Horizon, where you are to find the rising and setting of the Sun.

*To find the  
and Day*

I would know  
10th of May,  
at 3 in the A

Therefore  
the Months  
hour of 9 on  
the Hour-Line  
(which are M  
are the Aftern  
from the 10th  
proceeds down  
said Hour-line  
section, to on  
the Hour-line  
Tangent-Line  
43, which is  
hour afore said  
the Winter-H

*To find the  
same Tab*

The afore  
toucheth the  
and there you  
ceeds from th  
see that the e

*The Uses follow.**To find the Altitude of the Sun on any Hour and Day in the Year.*

I would know what Altitude the Sun will have the 10th of *May*, at 9 of the Clock in the Forenoon, or at 3 in the Afternoon, which is all one.

Therefore find the 10th of *May* in the Margent of the Months on the top of the Table; then find the hour of 9 on the right hand of the Table, and note the Hour-Line which passes from 8 on the right side, (which are Morning hours) to 3 on the left side (which are the Afternoon hours); then direct your eye down from the 10th of *May*, in one of the nearest lines that proceeds down-right, until it meets and intersects the said Hour-line; then direct your eye from that Intersection, to one of the thwart Lines that proceeds from the Hour-line, and where that Line meets with the Tangent-Line (on the right side of the Table) to 43, which is the Altitude of the Sun at that day and hour aforesaid: the same is to be understood also of the Winter-Hours.

*To find the Rising and Setting of the Sun by the same Table.*

The aforesaid 10th of *May*, note what Hour-Line toucheth the lower Line of the Margent of Months, and there you will see that the hour of 4, which proceeds from the Morning Hour-Lines, and you may see that the end of the 4 a Clock Line, doth come short

short of the said 10th day of *May*; which shews that the Sun rises a little after 4 of the Clock; and so much after 4 as the rising of the Sun is, so much does the Sun set before 8 at Night.

*The Explanation and Use of the Tables of the Suns Right Ascension; and of the Table of the Stars Right Ascension and Declination.*

*The Explanation of the Tables.*

In the Table of the Suns Right Ascension, the first Page contains the first six Months of the Year, and the next Page the other six Months.

In the first Column towards the left hand, are the days of the month, and in the other Columns is the Suns Right Ascension in Hours and Minutes.

In the Table of the Stars Right Ascension, there are six Columns; in the first, towards the left hand, are the names of the Stars; in the second are the Stars Magnitudes; in the third, the Right Ascension of the Stars in degrees and minutes; in the fourth, the Declination in degrees and minutes; in the fifth, the Right Ascension in hours and minutes; and in the sixth, the Denomination of the Declination, whether North or South.

*The Use of the Tables.*

*First, To find the time of the Stars coming upon the Meridian.*

*The Rule.*

When you have found the Right Ascension of

Sun and Stars  
the Right Ascension  
of the Stars  
less than that  
then subtract  
the Meridian  
from the Right  
Ascension  
the remainder  
will be the time  
of the Stars  
coming upon the  
Meridian

Suppose the  
Sun comes on the  
Meridian of *November*  
I find the  
Right Ascension  
minutes, and  
hours 23 minu  
Now becau  
than the Star  
Ascension 24  
from which  
there remains  
subtracting 12 ho  
the time of  
after Midnight

Suppose the  
Sun comes on the Mer  
680.  
I find in the  
3 hours 55 mi  
to be as before  
abstracted from  
hours 32 min  
to the Meri



Sun and Stars for any day proposed ; then substract the Right Ascension of the Sun from the Right Ascension of the Star : but if the Stars Right Ascension be less than that of the Sun, add thereto 24 hours, and then substract one from the other ; the remainder after subtraction is the time of the Stars coming upon the Meridian from Noon : and if the remainder exceed 12 hours, substract 12 hours therefrom, and then the remainder is the time from Midnight.

*Example 1.*

Suppose the time that the middle of the *Pleiades* comes on the Meridian, were required to the 5th day of *November* 1680.

I find the Stars Right Ascension to be 3 hours 26 minutes, and the Suns Right Ascension to be 15 hours 23 minutes.

Now because the Suns Right Ascension is more than the Stars, therefore add to the Stars Right Ascension 24 hours, which makes 27 hours 26 min. from which subtracting the Suns Right Ascension, there remains 12 hours 3 minutes ; from which subtracting 12 hours, there remains 3 minutes : which is the time of the *Pleiades* coming to the Meridian after Midnight, which was required.

*Example 2.*

Suppose the time of *Pegasus* lower Wing coming upon the Meridian on the said 5th of *November* 1680.

I find in the Table the Stars Right Ascension to be 3 hours 55 minutes, and the Suns Right Ascension to be as before, 15 hours 23 minutes ; which being subtracted from the Stars Right Ascension, leaves 12 hours 32 minutes, the true time of the Stars coming to the Meridian Afternoon.

*Secondly,*



*Secondly, The time being given, to find what Star will come to the Meridian about the said time,*

### The Rule.

To the Suns Right Ascension add the time to Noon, at which the Stars coming to the Meridian required, the sum is the Right Ascension of the Star that will come to the Meridian at that time; and which enter the Table, and look what Stars Right Ascension agrees with the Right Ascension before found or nearest thereto, and that is the Star sought for.

### Example.

Suppose *April* the 1<sup>st</sup>, I desire to know what Star will come upon the Meridian at 3 hours after Noon.

The Suns Right Ascension that day is, 1 hour 11 min. the time from Noon is 3 hours; which added to the Suns Right Ascension makes 16 hours 21 min. the nearest in the Table is the *Scorpions Heart*, whose Right Ascension is 16 hours 9 min. and comes to the Meridian 12 min. after 4; and *Hercules Head*, whose Right Ascension is 16 hours 50 min. from which 16 hours 21 min. and there rests 29 min. after 4 of the Clock, which is the time of *Hercules Head* coming upon the Meridian. Note, That 16 hours from Noon is 4 of the Clock next Morning.

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# A Table of y Sun's Right Ascen.

|      | Janua:       | Febr:        | March        | April.       | May.         | June         |
|------|--------------|--------------|--------------|--------------|--------------|--------------|
| Days | Right Ascen: | Right Ascen: | Right Ascen: | Right Ascen: | Right Ascen: | Right Ascen: |
|      | H · M · S    | H · M · S    | H · M · S    | H · M · S    | H · M · S    | H · M · S    |
| 1    | 19 · 55      | 21 · 42      | 23 · 28      | 01 · 21      | 03 · 14      | 05 · 06      |
| 2    | 19 · 59      | 21 · 46      | 23 · 32      | 01 · 25      | 03 · 18      | 05 · 10      |
| 3    | 19 · 43      | 21 · 50      | 23 · 36      | 01 · 29      | 03 · 22      | 05 · 14      |
| 4    | 19 · 47      | 21 · 54      | 23 · 39      | 01 · 35      | 03 · 26      | 05 · 18      |
| 5    | 19 · 51      | 21 · 58      | 23 · 43      | 01 · 36      | 03 · 30      | 05 · 22      |
| 6    | 19 · 56      | 22 · 02      | 23 · 46      | 01 · 40      | 03 · 34      | 05 · 26      |
| 7    | 20 · 00      | 22 · 06      | 23 · 50      | 01 · 44      | 03 · 38      | 05 · 30      |
| 8    | 20 · 04      | 22 · 10      | 23 · 53      | 01 · 47      | 03 · 42      | 05 · 34      |
| 9    | 20 · 09      | 22 · 14      | 23 · 57      | 01 · 51      | 03 · 46      | 05 · 38      |
| 10   | 20 · 13      | 22 · 17      | 00 · 01      | 01 · 54      | 03 · 50      | 05 · 42      |
| 11   | 20 · 17      | 22 · 21      | 00 · 05      | 01 · 58      | 03 · 54      | 05 · 46      |
| 12   | 20 · 22      | 22 · 25      | 00 · 08      | 02 · 02      | 03 · 58      | 05 · 50      |
| 13   | 20 · 26      | 22 · 29      | 00 · 12      | 02 · 06      | 04 · 02      | 05 · 54      |
| 14   | 20 · 30      | 22 · 33      | 00 · 15      | 02 · 10      | 04 · 06      | 05 · 58      |
| 15   | 20 · 34      | 22 · 36      | 00 · 19      | 02 · 13      | 04 · 10      | 06 · 02      |
| 16   | 20 · 38      | 22 · 40      | 00 · 23      | 02 · 17      | 04 · 14      | 06 · 06      |
| 17   | 20 · 42      | 22 · 44      | 00 · 26      | 02 · 21      | 04 · 18      | 06 · 10      |
| 18   | 20 · 46      | 22 · 48      | 00 · 30      | 02 · 25      | 04 · 22      | 06 · 14      |
| 19   | 20 · 50      | 22 · 52      | 00 · 33      | 02 · 29      | 04 · 26      | 06 · 18      |
| 20   | 20 · 54      | 22 · 55      | 00 · 37      | 02 · 32      | 04 · 30      | 06 · 22      |
| 21   | 20 · 58      | 22 · 59      | 00 · 41      | 02 · 36      | 04 · 34      | 06 · 26      |
| 22   | 21 · 03      | 23 · 03      | 00 · 44      | 02 · 40      | 04 · 38      | 06 · 30      |
| 23   | 21 · 07      | 23 · 06      | 00 · 48      | 02 · 44      | 04 · 42      | 06 · 34      |
| 24   | 21 · 11      | 23 · 10      | 00 · 52      | 02 · 48      | 04 · 46      | 06 · 38      |
| 25   | 21 · 15      | 23 · 13      | 00 · 55      | 02 · 51      | 04 · 50      | 06 · 42      |
| 26   | 21 · 19      | 23 · 17      | 00 · 59      | 02 · 55      | 04 · 54      | 06 · 46      |
| 27   | 21 · 23      | 23 · 21      | 01 · 03      | 02 · 59      | 04 · 58      | 06 · 50      |
| 28   | 21 · 27      | 23 · 25      | 01 · 06      | 03 · 03      | 05 · 02      | 06 · 54      |
| 29   | 21 · 31      |              | 01 · 10      | 03 · 07      | 05 · 06      | 06 · 58      |
| 30   | 21 · 35      |              | 01 · 14      | 03 · 10      | 05 · 11      | 07 · 02      |
| 31   | 21 · 38      |              | 01 · 17      |              | 05 · 15      | 07 · 06      |

## A Table of

|              | July.        | Aug.         |
|--------------|--------------|--------------|
| Right Ascen: | Right Ascen: | Right Ascen: |
| H · M · S    | H · M · S    | H · M · S    |
| 1            | 07 · 25      | 09 · 17      |
| 2            | 07 · 27      | 09 · 21      |
| 3            | 07 · 31      | 09 · 25      |
| 4            | 07 · 35      | 09 · 29      |
| 5            | 07 · 39      | 09 · 33      |
| 6            | 07 · 43      | 09 · 37      |
| 7            | 07 · 47      | 09 · 41      |
| 8            | 07 · 51      | 09 · 45      |
| 9            | 07 · 55      | 09 · 49      |
| 10           | 07 · 59      | 09 · 53      |
| 11           | 08 · 03      | 09 · 57      |
| 12           | 08 · 07      | 10 · 01      |
| 13           | 08 · 11      | 10 · 05      |
| 14           | 08 · 15      | 10 · 09      |
| 15           | 08 · 19      | 10 · 13      |
| 16           | 08 · 23      | 10 · 17      |
| 17           | 08 · 27      | 10 · 21      |
| 18           | 08 · 31      | 10 · 25      |
| 19           | 08 · 35      | 10 · 29      |
| 20           | 08 · 39      | 10 · 33      |
| 21           | 08 · 43      | 10 · 37      |
| 22           | 08 · 47      | 10 · 41      |
| 23           | 08 · 51      | 10 · 45      |
| 24           | 08 · 55      | 10 · 49      |
| 25           | 08 · 59      | 10 · 53      |
| 26           | 09 · 03      | 10 · 57      |
| 27           | 09 · 06      | 11 · 01      |
| 28           | 09 · 10      | 11 · 05      |
| 29           | 09 · 14      | 11 · 09      |
| 30           | 09 · 17      | 11 · 13      |
| 31           | 09 · 21      | 11 · 17      |

# Table of y Sun's Right Ascen:

| July.           | August          | Septem          | Octo:           | Novem           | Decem           |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Right<br>Ascen: | Right<br>Ascen: | Right<br>Ascen: | Right<br>Ascen: | Right<br>Ascen: | Right<br>Ascen: |
| H · M           | H · M           | H · M           | H · M           | H · M           | H · M           |
| 1 07.23         | 09.25           | 11.19           | 13.08           | 15.07           | 17.15           |
| 2 07.27         | 09.29           | 11.23           | 13.12           | 15.11           | 17.20           |
| 3 07.31         | 09.33           | 11.26           | 13.15           | 15.15           | 17.25           |
| 4 07.35         | 09.37           | 11.30           | 13.19           | 15.19           | 17.29           |
| 5 07.39         | 09.40           | 11.33           | 13.22           | 15.23           | 17.34           |
| 6 07.43         | 09.44           | 11.37           | 13.26           | 15.27           | 17.38           |
| 7 07.47         | 09.48           | 11.41           | 13.30           | 15.31           | 17.42           |
| 8 07.51         | 09.51           | 11.44           | 13.34           | 15.36           | 17.47           |
| 9 07.55         | 09.55           | 11.48           | 13.38           | 15.40           | 17.51           |
| 10 07.59        | 09.58           | 11.51           | 13.41           | 15.45           | 17.56           |
| 11 08.03        | 10.02           | 11.55           | 13.45           | 15.49           | 18.00           |
| 12 08.07        | 10.06           | 11.59           | 13.49           | 15.53           | 18.05           |
| 13 08.11        | 10.10           | 12.02           | 13.53           | 15.58           | 18.09           |
| 14 08.15        | 10.14           | 12.06           | 13.57           | 16.02           | 18.14           |
| 15 08.19        | 10.17           | 12.09           | 14.00           | 16.07           | 18.19           |
| 16 08.23        | 10.21           | 12.13           | 14.04           | 16.11           | 18.24           |
| 17 08.27        | 10.25           | 12.17           | 14.08           | 16.15           | 18.28           |
| 18 08.31        | 10.28           | 12.20           | 14.12           | 16.19           | 18.33           |
| 19 08.35        | 10.32           | 12.24           | 14.16           | 16.23           | 18.37           |
| 20 08.39        | 10.35           | 12.27           | 14.20           | 16.28           | 18.41           |
| 21 08.43        | 10.39           | 12.31           | 14.24           | 16.32           | 18.45           |
| 22 08.47        | 10.43           | 12.35           | 14.28           | 16.36           | 18.49           |
| 23 08.51        | 10.46           | 12.38           | 14.32           | 16.40           | 18.54           |
| 24 08.55        | 10.50           | 12.42           | 14.36           | 16.44           | 18.58           |
| 25 08.58        | 10.53           | 12.45           | 14.39           | 16.49           | 19.03           |
| 26 09.02        | 10.57           | 12.49           | 14.43           | 16.53           | 19.07           |
| 27 09.06        | 11.01           | 12.53           | 14.47           | 16.57           | 19.11           |
| 28 09.10        | 11.04           | 12.57           | 14.51           | 17.02           | 19.16           |
| 29 09.14        | 11.08           | 13.01           | 14.55           | 17.06           | 19.20           |
| 30 09.17        | 11.11           | 13.04           | 14.59           | 17.11           | 19.25           |
| 1 09.21         | 11.15           |                 | 15.03           |                 | 19.30           |

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**A Table of  $\gamma$  Magnitudes, Right  
Ascension in Hours and Minuts, and  
Degrees and Minuts, &  $\gamma$  Declination  
North or South of 33 fixed Stars.**

| Names of $\gamma$ Stars.                | M | R Asc. |     | Decl. | R. Asc. |
|---|---|--------|-----|-------|---------|
|   |   | D.     | MD. |       | MH.     |
| Pole Star or last in $\gamma$ lit head. | 2 | 7      | 53  | 87.33 | 0.3     |
| Andromedas Girdler.                     | 2 | 12     | 31  | 33.50 | 0.9     |
| Medusæes head.                          | 3 | 41     | 27  | 39.55 | 2.4     |
| Perseus right side.                     | 2 | 44     | 30  | 48.33 | 2.5     |
| Middle of the Pleides.                  | 5 | 51     | 22  | 23.06 | 3.2     |
| Bulls eye.                              | 1 | 64     | 0   | 15.48 | 4.1     |
| Hercus or Goat.                         | 1 | 72     | 44  | 45.36 | 4.9     |
| Orions left foot.                       | 1 | 74     | 30  | 8.38  | 4.5     |
| Mid-star in Orions Girdle.              | 2 | 79     | 45  | 1.28  | 5.1     |
| Orions right shoulder.                  | 2 | 84     | 5   | 7.18  | 5.2     |
| Auriga. or Waggoner.                    | 2 | 84     | 45  | 44.56 | 5.3     |
| Great Dog.                              | 1 | 67     | 24  | 16.13 | 6.3     |
| Castor. or Apollo.                      | 2 | 108    | 00  | 52.30 | 7.4     |
| Little dog.                             | 1 | 110    | 20  | 6.6   | 7.2     |
| Poullux or Hercules.                    | 2 | 110    | 25  | 28.48 | 7.1     |
| Hydraes heart.                          | 1 | 137    | 36  | 7.10  | 9.1     |
| Lyons heart.                            | 1 | 147    | 50  | 13.39 | 9.4     |
| Great Bears fore guard.                 | 2 | 166    | 48  | 63.32 | 10.4    |
| Lyons tayl.                             | 1 | 172    | 45  | 16.52 | 11.3    |
| Virgins Spike.                          | 1 | 196    | 43  | 9.11  | 13.7    |
| Last in Great Bears tayl.               | 2 | 203    | 36  | 51.5  | 13.3    |
| Arcturius.                              | 1 | 209    | 56  | 21.4  | 14.8    |
| Little Bears fore guard.                | 2 | 222    | 46  | 75.3  | 14.4    |
| Brightest in $\gamma$ Crown.            | 3 | 231    | 00  | 37.43 | 15.4    |
| Scorpions heart.                        | 1 | 242    | 23  | 25.37 | 16.4    |
| Hercules head.                          | 3 | 254    | 40  | 14.51 | 16.4    |
| Lyra. or harp.                          | 1 | 276    | 17  | 38.30 | 18.4    |
| Eagle. or Vulture.                      | 1 | 293    | 28  | 8.119 | 19.3    |
| Swans tayl.                             | 2 | 307    | 30  | 44.5  | 20.9    |
| Dolphins head.                          | 3 | 307    | 53  | 15.0  | 20.8    |
| Pegassus mouth.                         | 1 | 321    | 50  | 8.19  | 21.2    |
| Pomahant.                               | 3 | 339    | 30  | 31.17 | 21.9    |
| Pegassus lower wing.                    | 2 | 358    | 50  | 13.22 | 23.9    |

*Table of  $\gamma$   
Cityes,  
in & ab*

**ENGLAND**

|            |     |
|------------|-----|
| London     | ... |
| Bristol    | ... |
| Gloucester | ... |
| Exeter     | ... |
| Worcester  | ... |
| Nottingham | ... |
| Leicester  | ... |
| Sheffield  | ... |
| Manchester | ... |
| Birmingham | ... |
| Cardiff    | ... |
| Edinburgh  | ... |
| Glasgow    | ... |
| London     | ... |
| Bristol    | ... |
| Gloucester | ... |
| Exeter     | ... |
| Worcester  | ... |
| Nottingham | ... |
| Leicester  | ... |
| Sheffield  | ... |
| Manchester | ... |
| Birmingham | ... |
| Cardiff    | ... |
| Edinburgh  | ... |
| Glasgow    | ... |



*Table of the Latitudes of the Principal  
Cities, Townes, and Islands  
in & about Great Britain & Ireland*

| ENGLAND    |           | WALES       |           |
|------------|-----------|-------------|-----------|
|            | o . ' . " |             | o . ' . " |
| Aberdeen   | 57.00     | Anglesey    | 53.28     |
| Bristol    | 53.54     | Brecknock   | 52.30     |
| Cardiff    | 53.13     | Cardigan    | 52.12     |
| Exeter     | 51.35     | Cardiff     | 51.58     |
| London     | 52.10     | Carmarthen  | 51.18     |
| Manchester | 53.12     | Denbigh     | 53.14     |
| Nottingham | 51.25     | Flint       | 53.18     |
| Reading    | 51.30     | Llandaff    | 51.36     |
| Shrewsbury | 53.20     | Monmouth    | 51.51     |
| Stirling   | 50.48     | Montgomery  | 51.56     |
| Swansea    | 52.08     | Pembroke    | 51.46     |
| Torquay    | 51.20     | Rednor      | 52.20     |
| Worcester  | 53.00     | St. David's | 52.00     |
| York       | 50.50     | ISLANDS     |           |
|            | 55.00     | Guernsey    | 49.30     |
|            | 50.50     | Jersey      | 49.12     |
|            | 50.32     | Lundy       | 51.22     |
|            | 51.12     | Man         | 54.24     |
|            | 52.00     | Portland    | 50.30     |
|            | 51.50     | Wight       | 50.39     |
|            | 52.07     | SCOTLAND    |           |
|            | 52.30     | Aberdeen    | 57.32     |
|            | 52.20     | Dumblain    | 56.21     |
|            | 54.23     | Dundee      | 56.50     |
|            | 54.15     | Dunkel      | 56.48     |
|            | 52.45     | Edinburgh   | 56.00     |
|            | 53.20     | Glasgow     | 55.50     |
|            | 51.32     | Orkney      | 60.06     |
|            | 52.24     | St. Andrews | 56.39     |
|            | 52.45     | Stirling    | 56.12     |
|            | 55.12     | IRELAND     |           |
|            | 53.00     | Antrim      | 54.30     |
|            | 51.43     | Arglan      | 54.10     |
|            | 51.08     | Armagh      | 54.14     |
|            | 50.36     | Clare       | 52.34     |
|            | 51.40     | Cork        | 51.45     |
|            | 51.12     | Droghda     | 53.38     |
|            | 52.50     | Dublin      | 54.27     |
|            | 52.50     | Dundalk     | 53.52     |
|            | 52.44     | Galloway    | 55.02     |
|            | 50.30     | Kildare     | 53.00     |
|            | 52.30     | Knockfergus | 54.37     |
|            | 50.20     | Kinsale     | 51.41     |
|            | 52.25     | Limerick    | 52.39     |
|            | 54.00     | Waterford   | 52.09     |
|            |           | Wexford     | 52.18     |

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roni D  
at Naga T

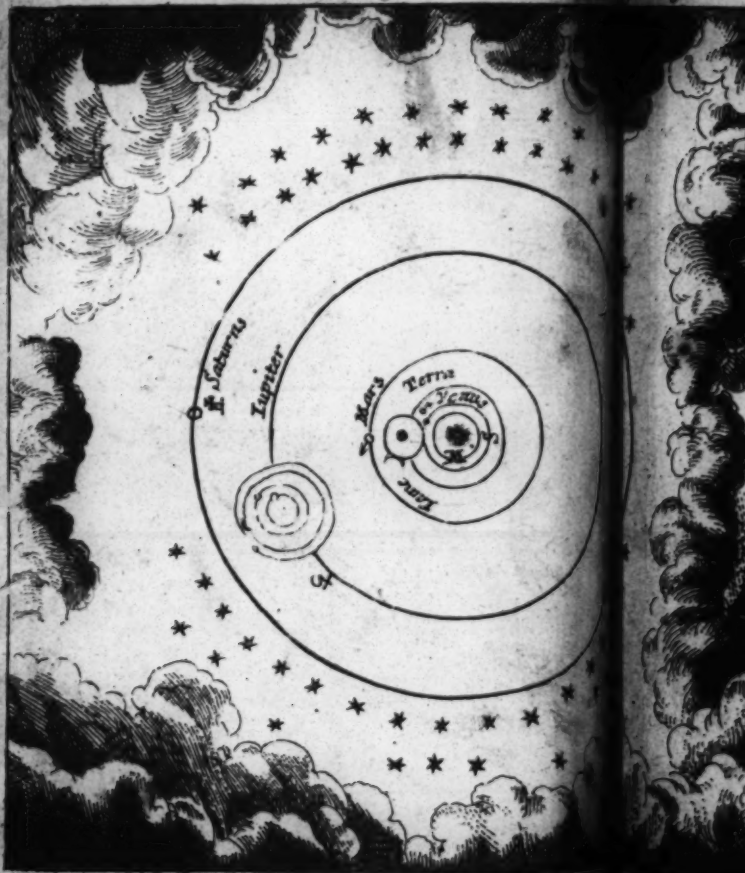


RENATUS DESCARTES Nobilis Gallus,  
Turonensi Dominus summus Mathema: & Philoso:  
at Blagæ Turonum p̄dicte Cal Apr 1596 Denatus Holmiae  
Cal Febr 1650.



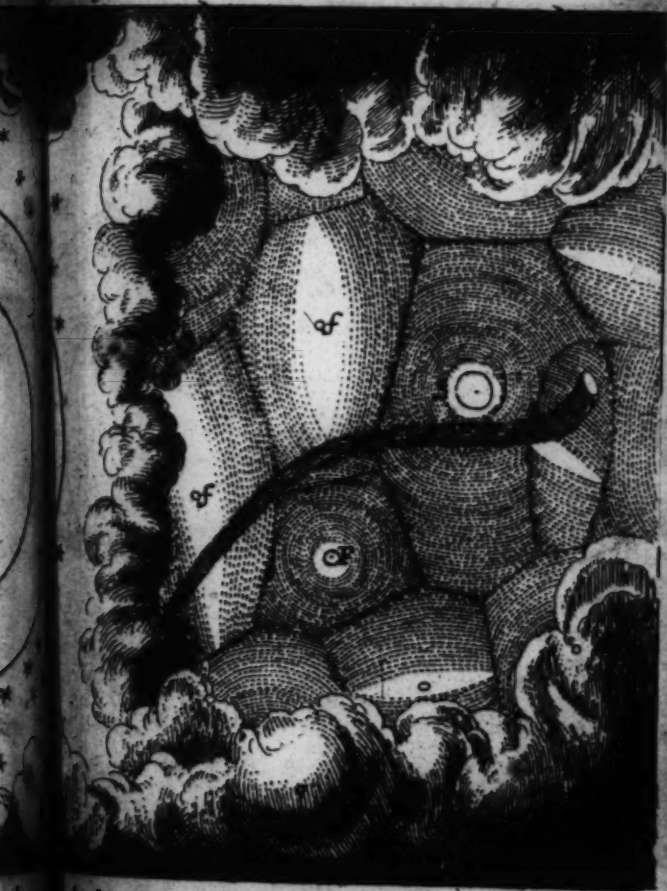


The Systeme of Des Cartes which supposeth the Sun Immovable in the  
 Celestiall Bodyes move from West to East as the Earth upon his  
 a mean betwixt Tycho Brahe, and Copernicus, attributing no motion  
 the Contrary Opinion supporting it with Very strong Reasons



Des Cartes places the Sun Among the fixed  
 says the Sun and fixed Starrs appear in one and the same  
 are notwithstanding distance in the superior part of the  
 Sun and Earth, as the Fixed Starrs see might easily  
 them dispersed through all the Dimensions of the  
 the Earth  
 superficies of  
 each other  
 multitude of  
 appear

Immovable in the Center of the World. And that the  
 the Sun do's upon his own Axis his Hypothesis is as it were  
 attributing no motion to the Earth, which Copernicus Supposes  
 strong Reasons.



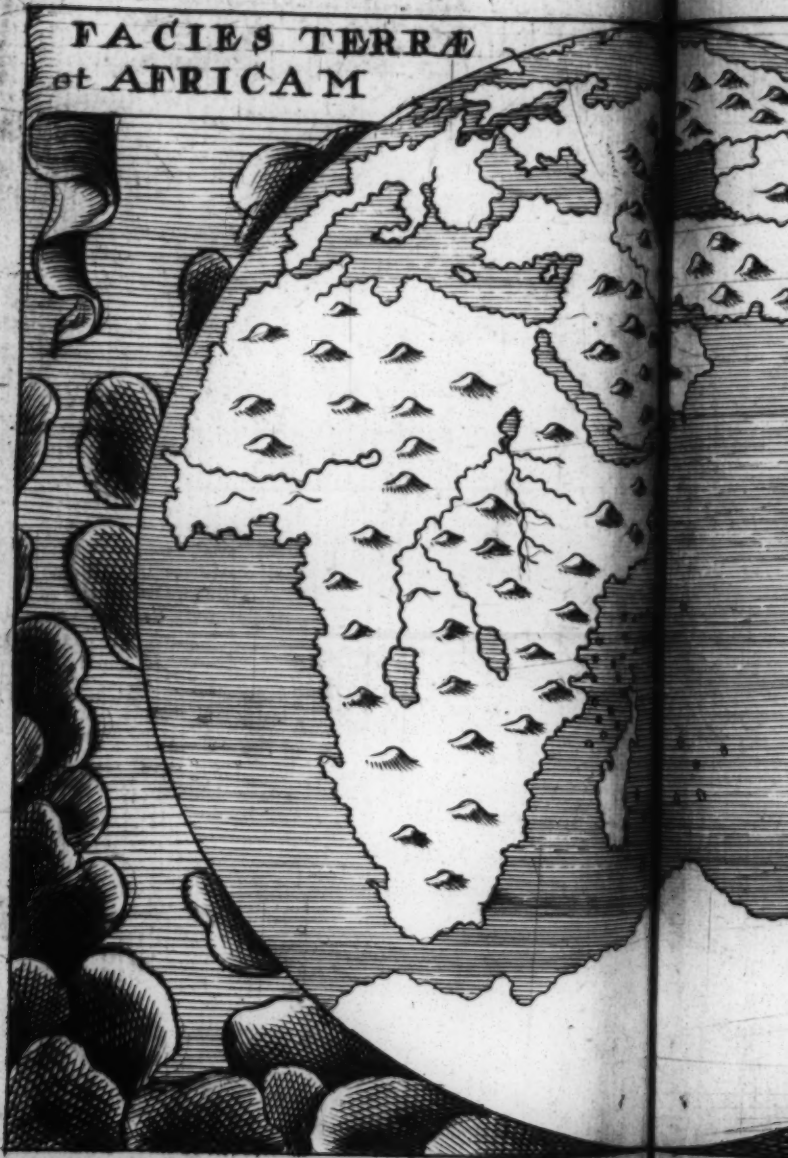
the Earth Among the Planets and though he  
 superficies of the Sphere, yet these Different Bodys  
 each other so that if you suppose S. were the  
 multitude of other Starrs both above and under  
 appear by the Inspection of this Figure.







FACIES TERRÆ  
et AFRICAM



EUROPAM ASIAM  
EXHIBENS







MACI TERRÆ  
IN LUNA





AMERICANA  
CONSECTA





Northern 2



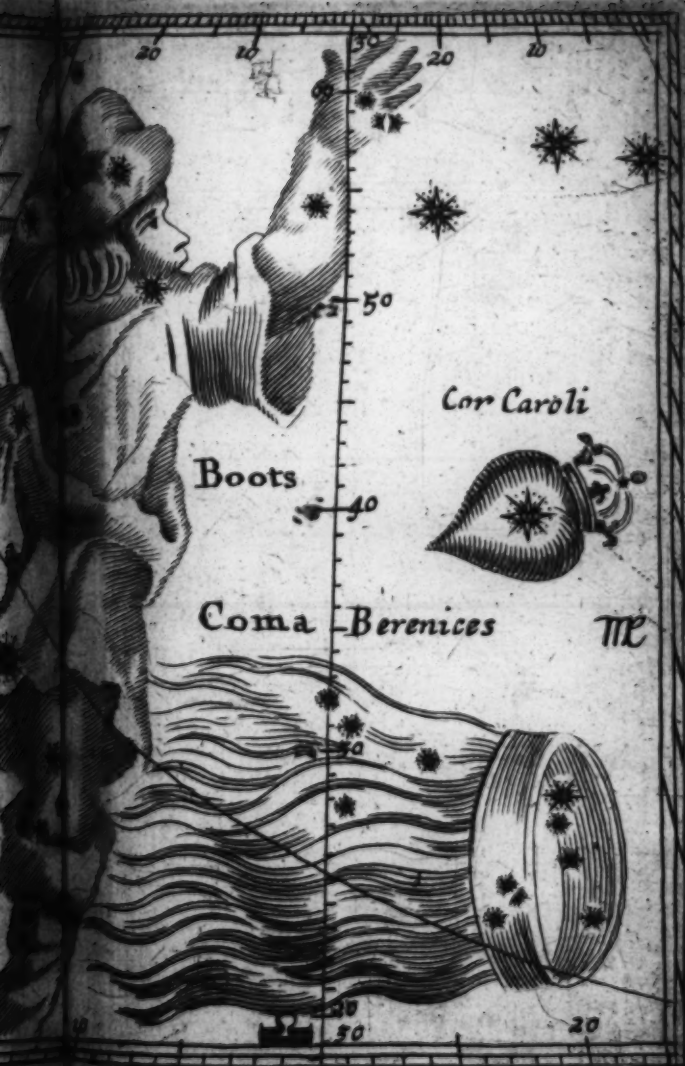




Northern 546

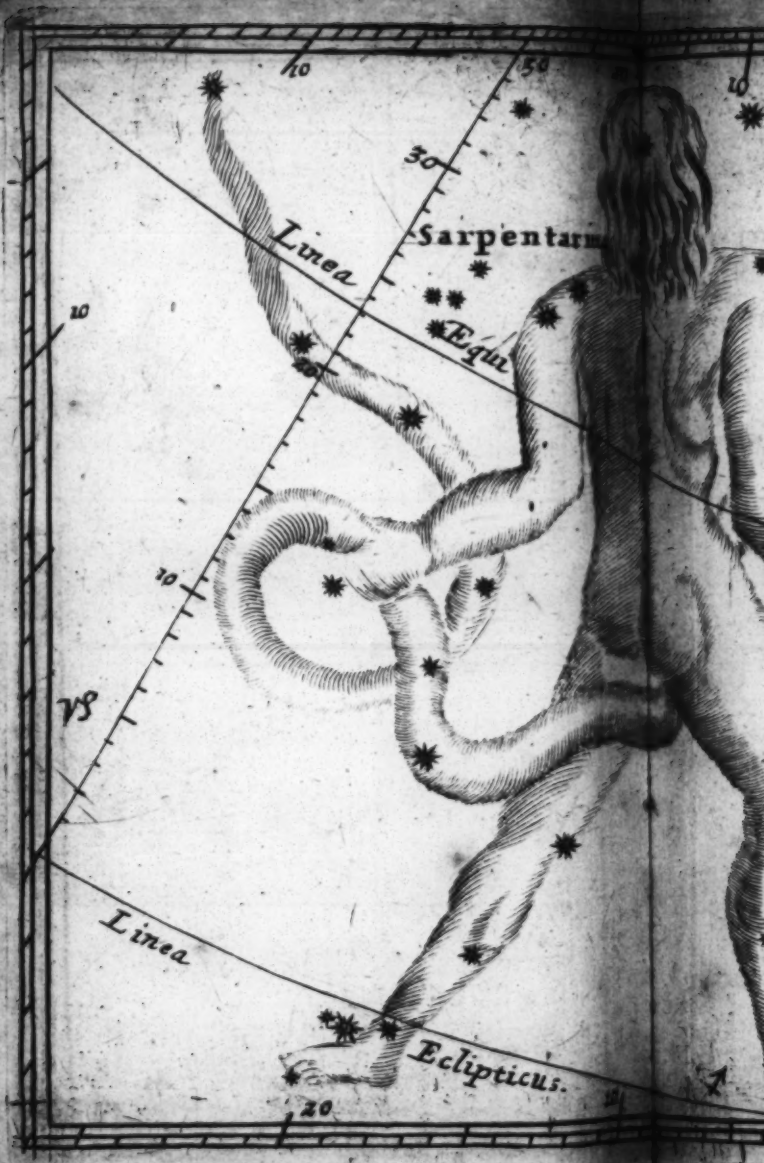


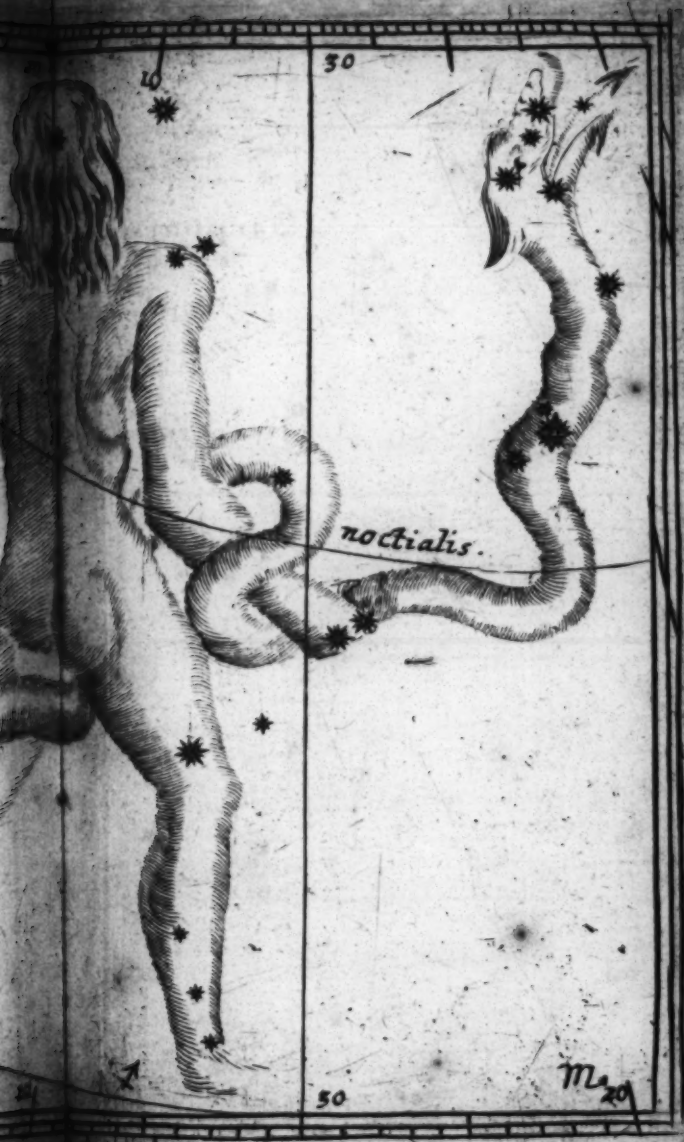






Northern 14









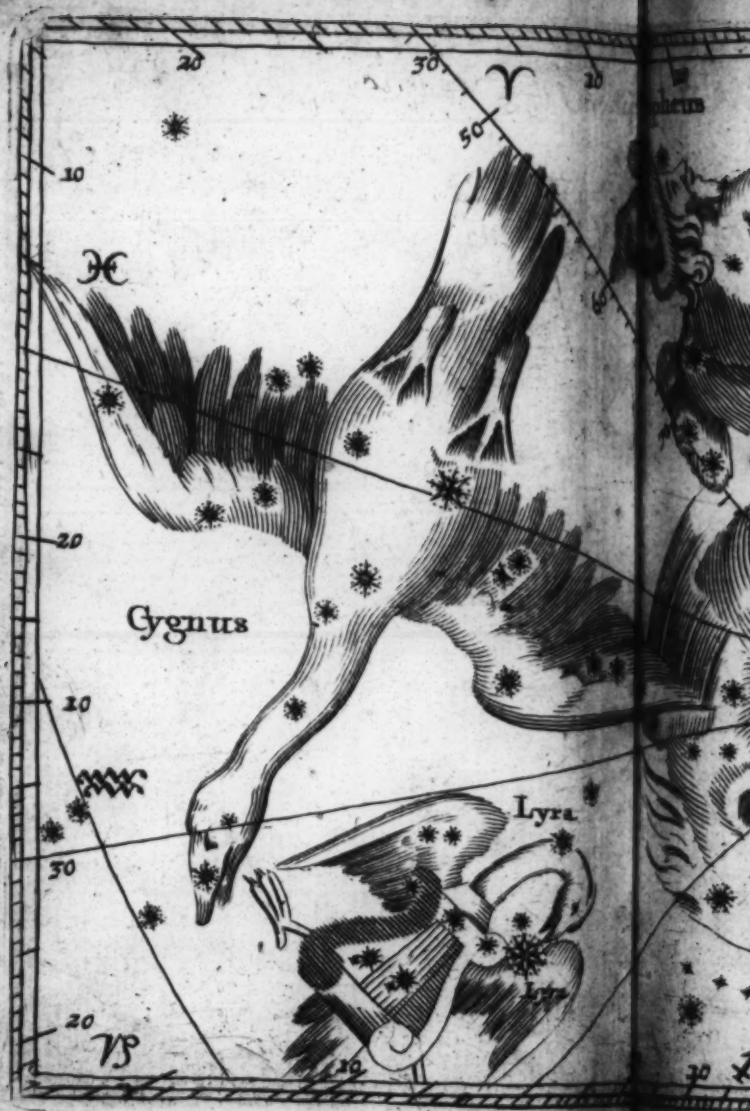


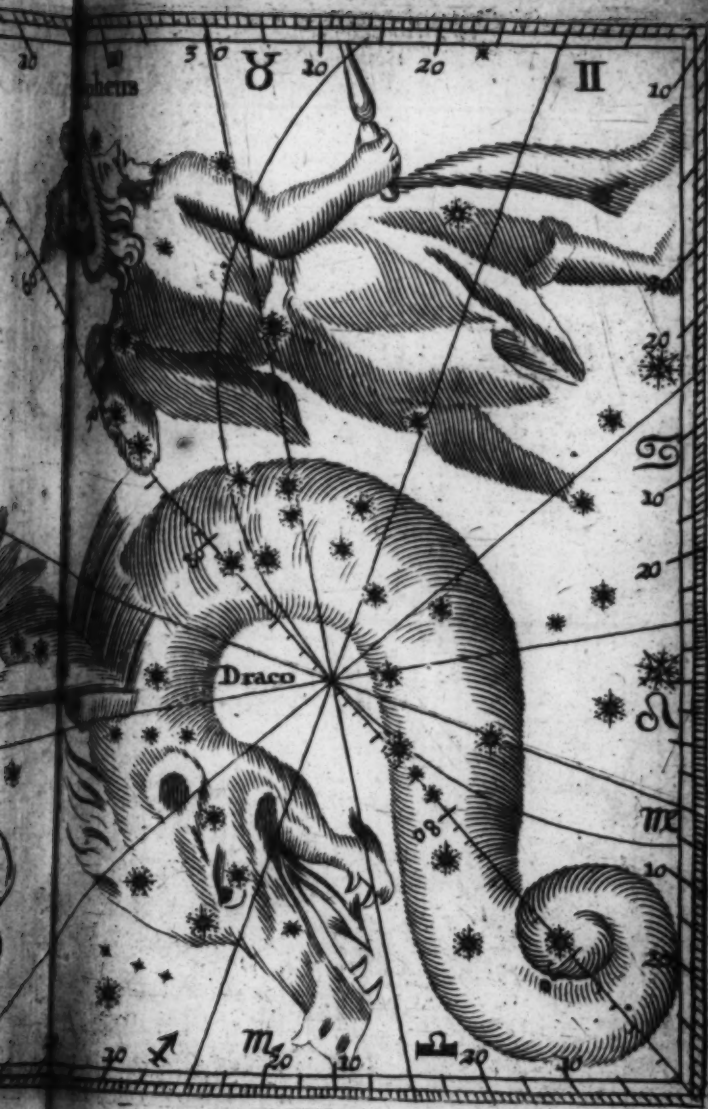








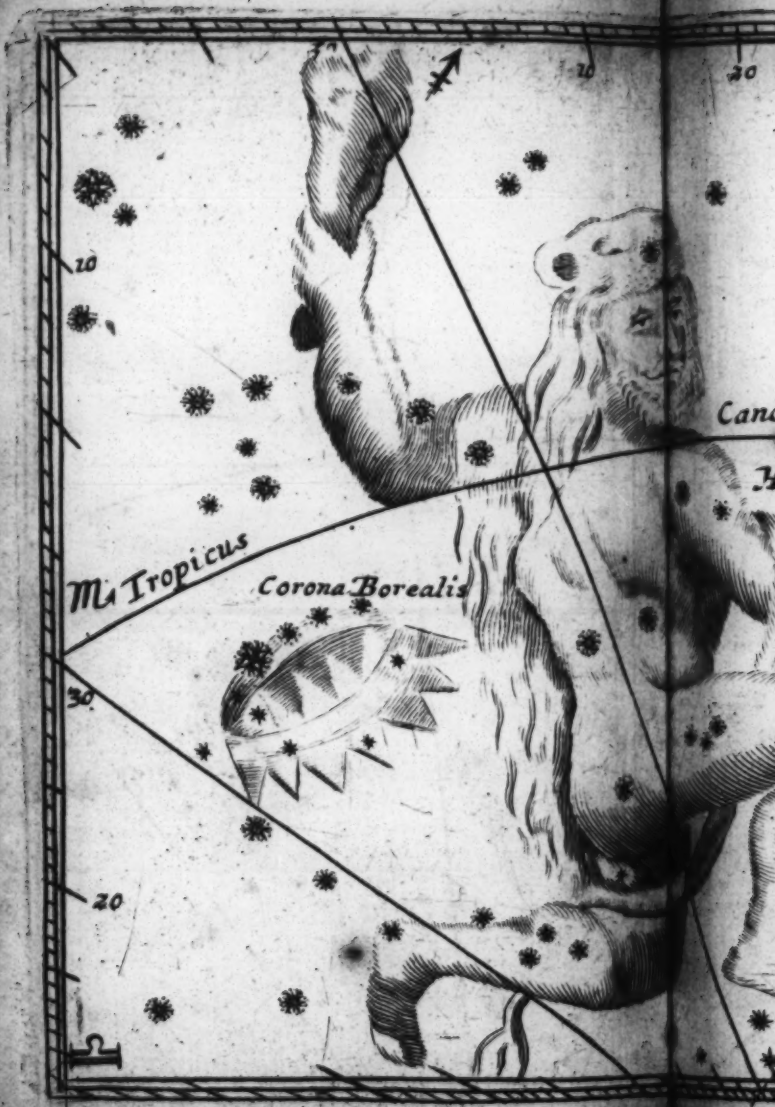


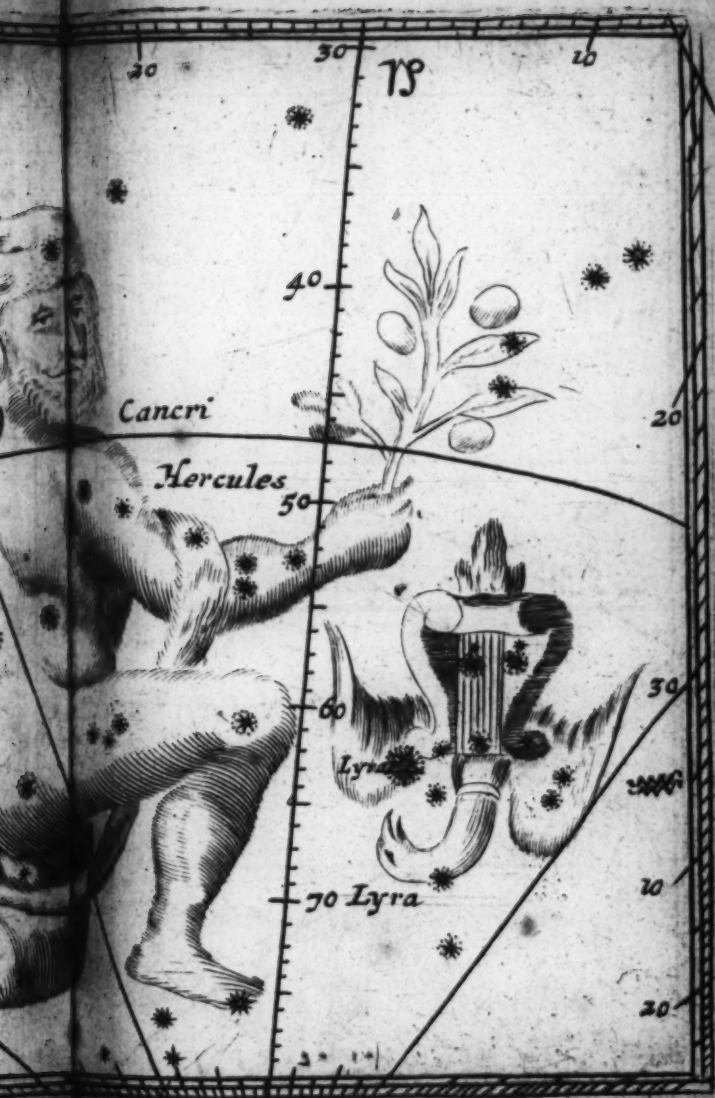


















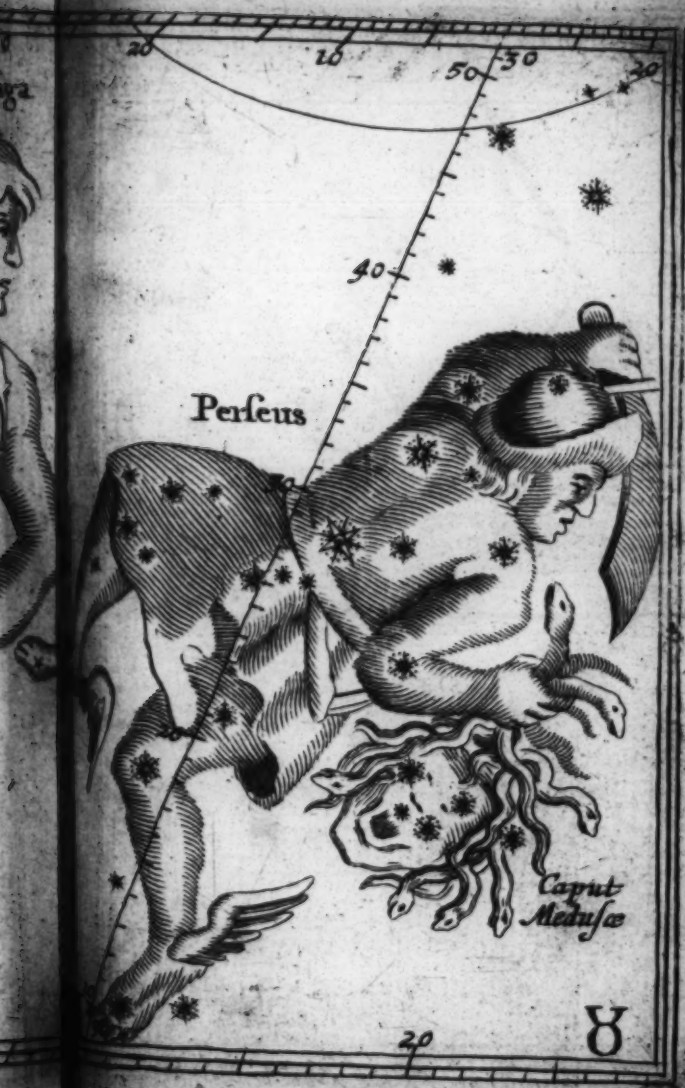








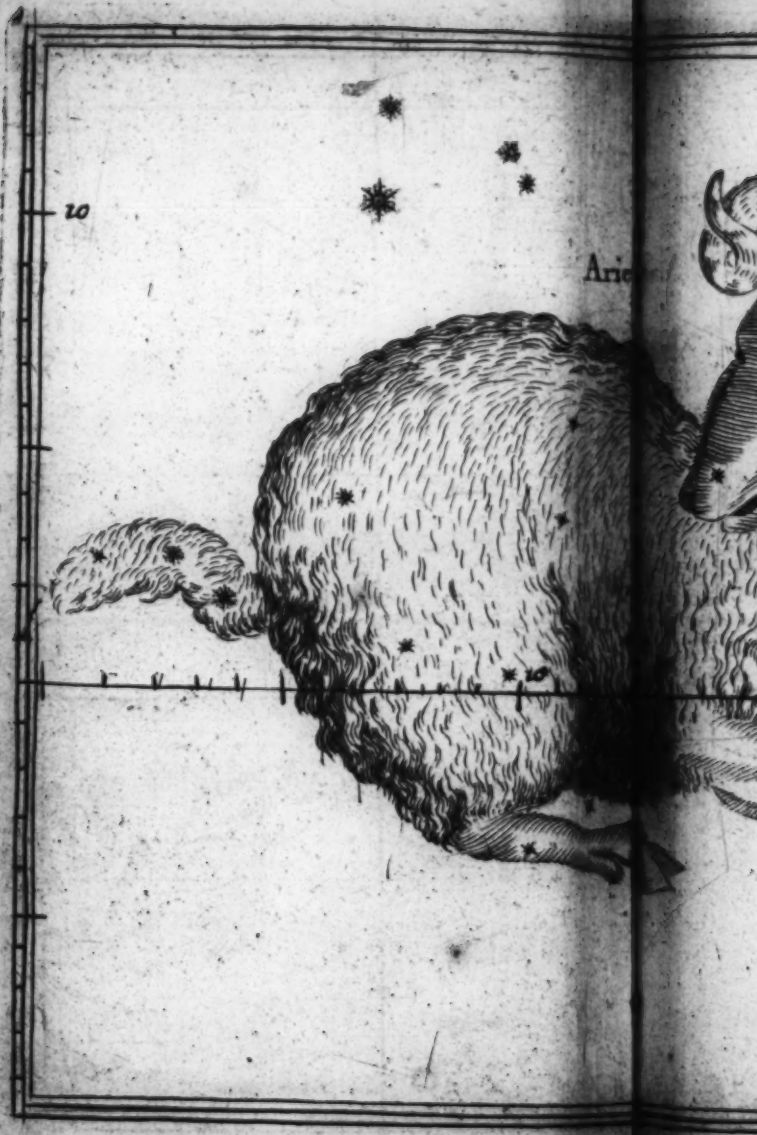




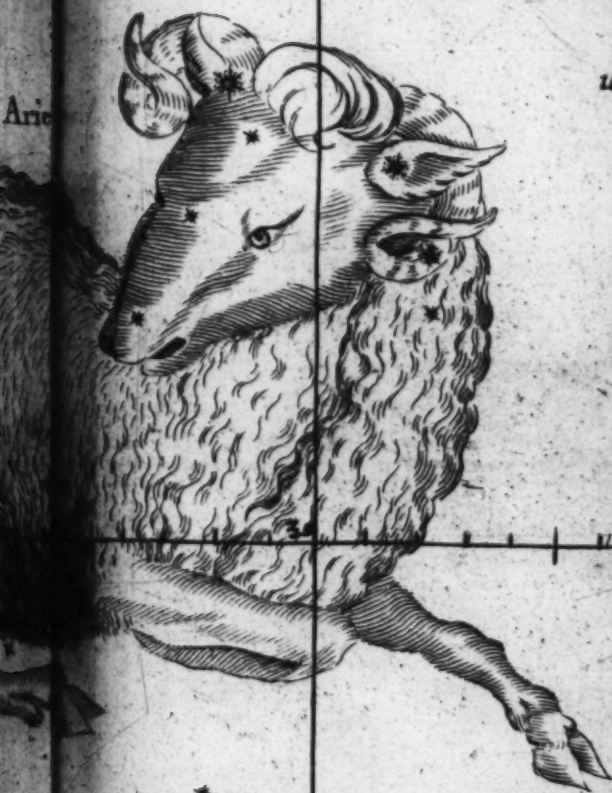








Arie



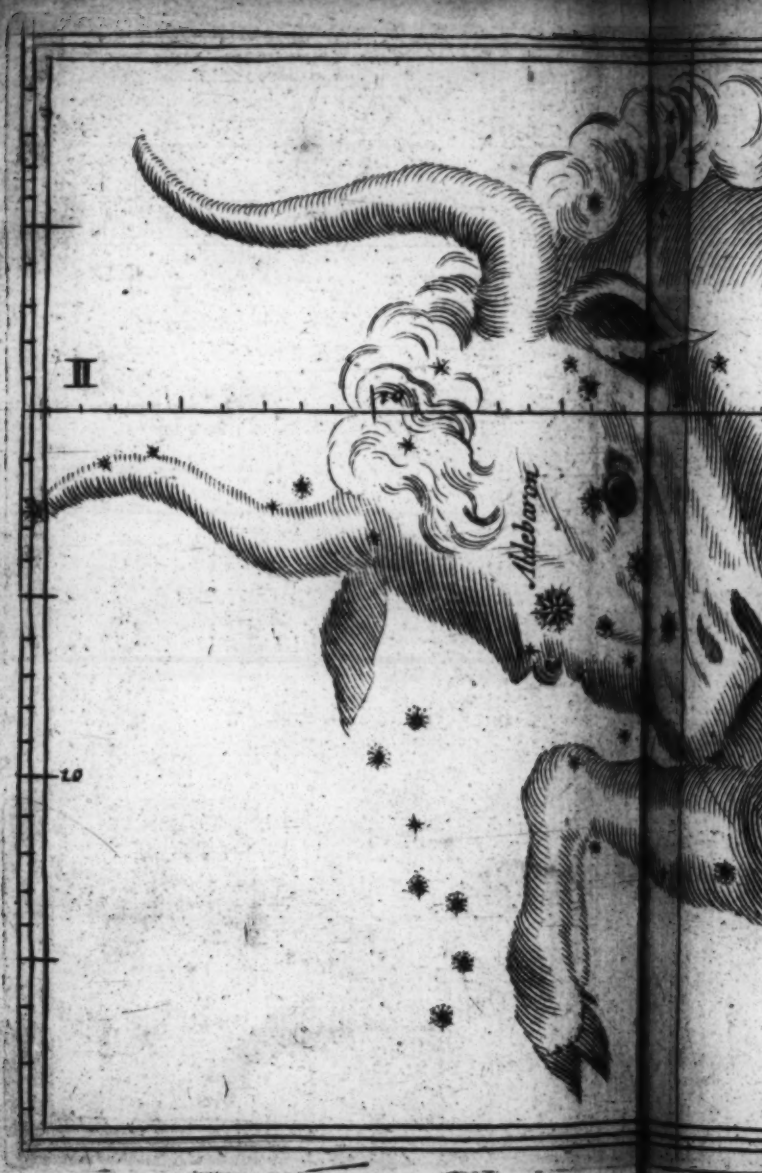
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δ

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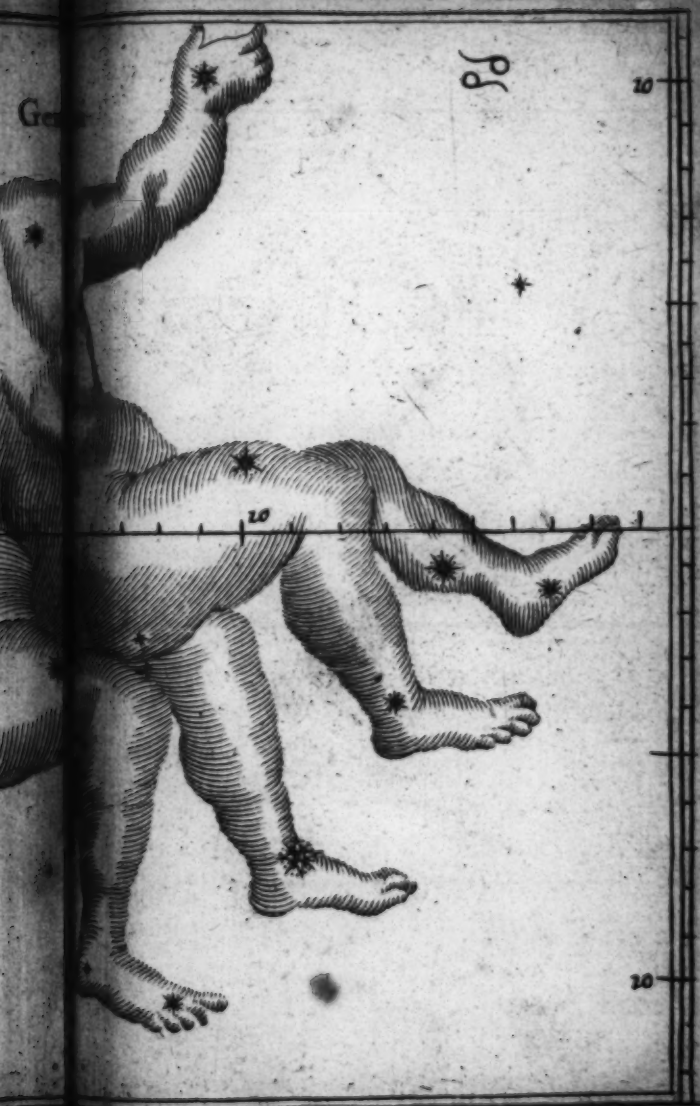






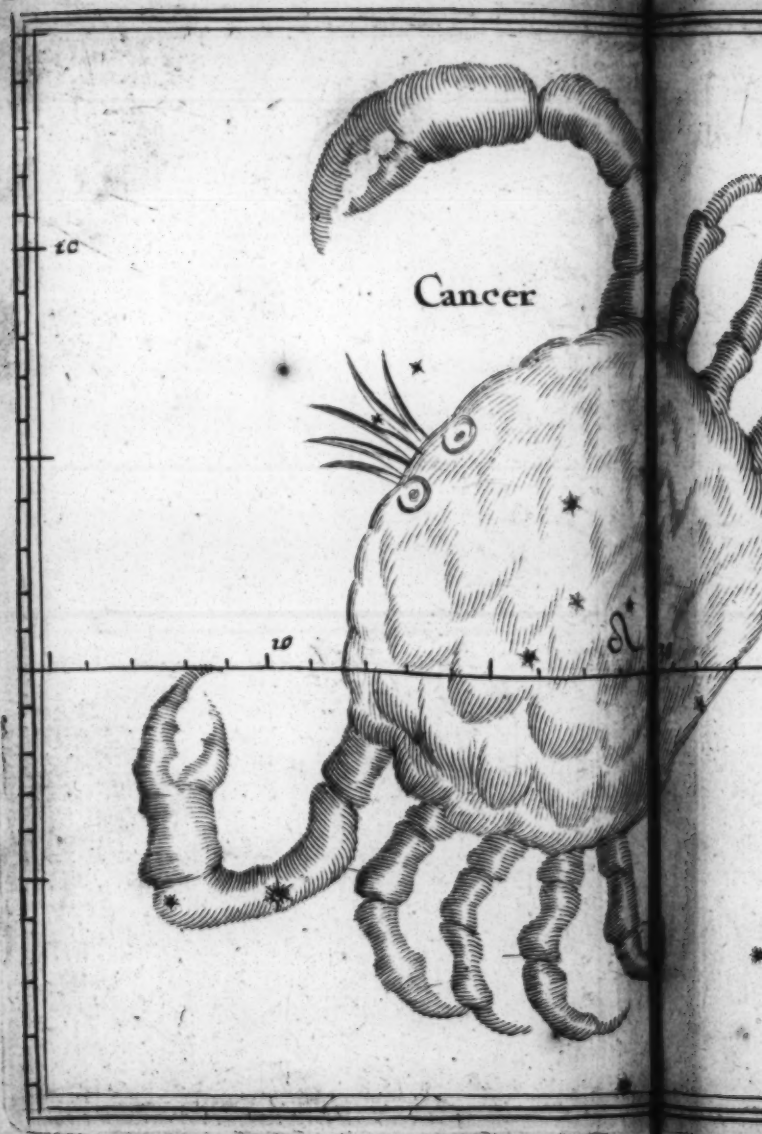


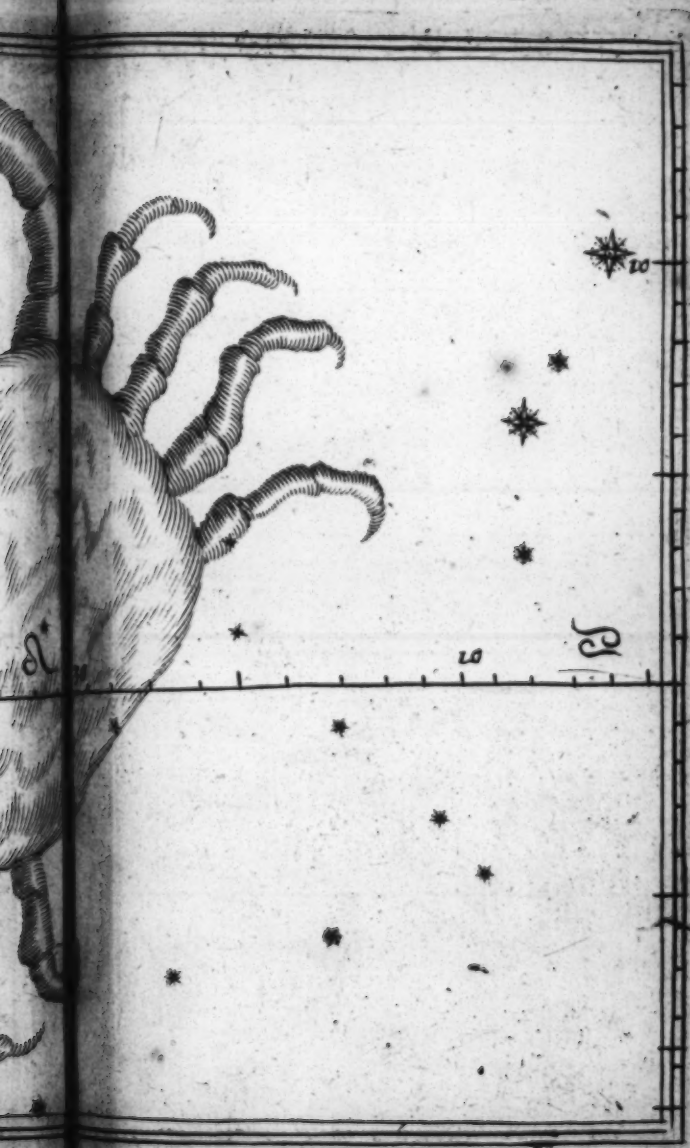














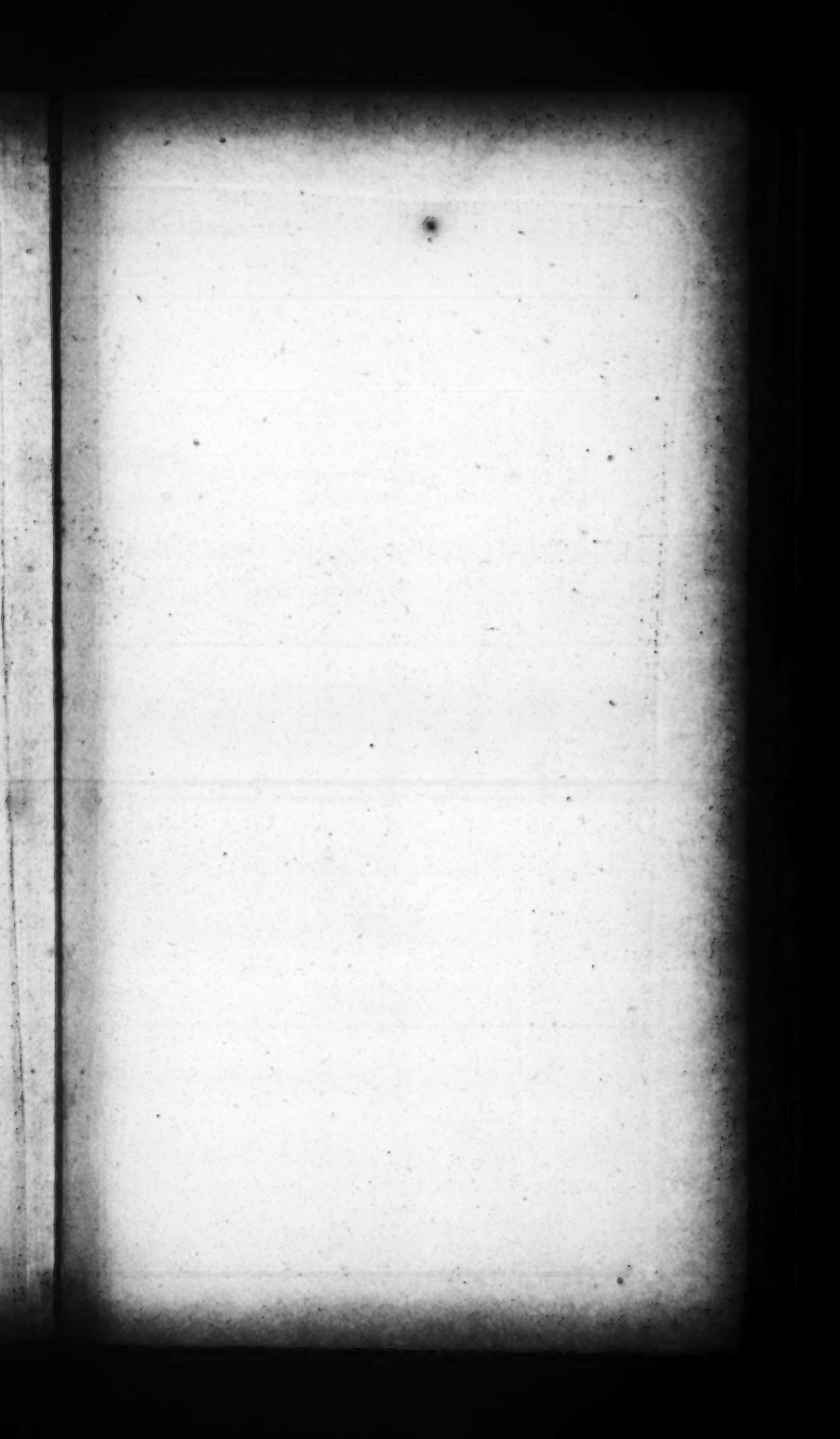
















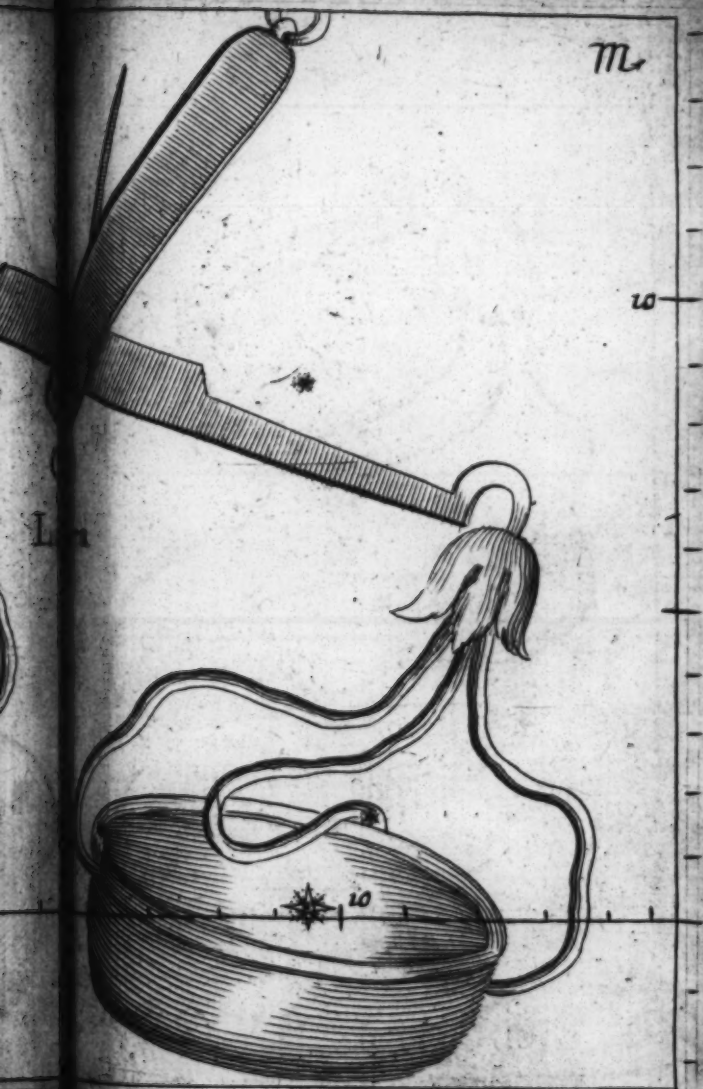








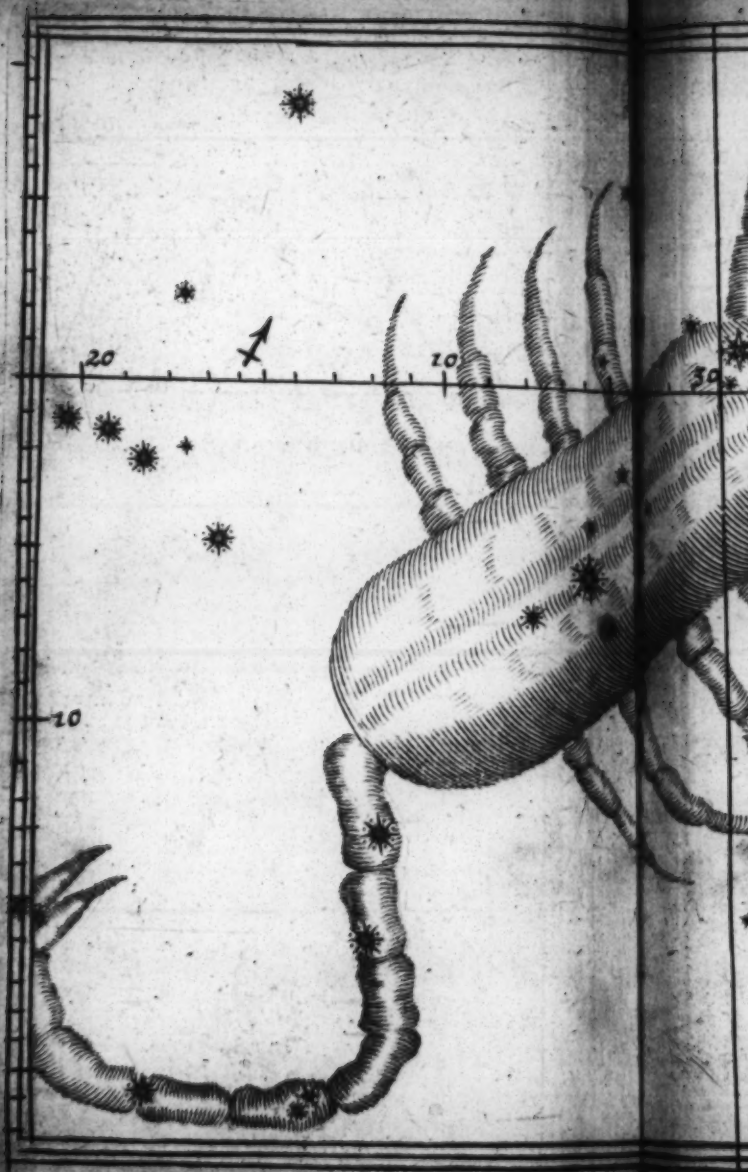
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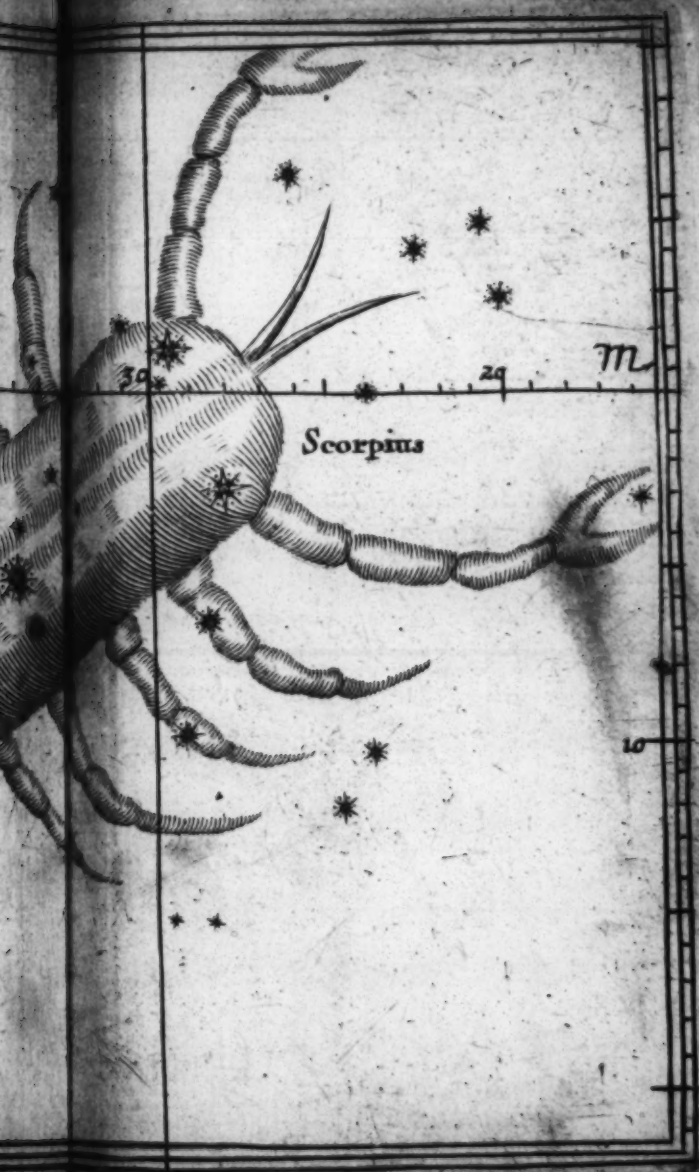






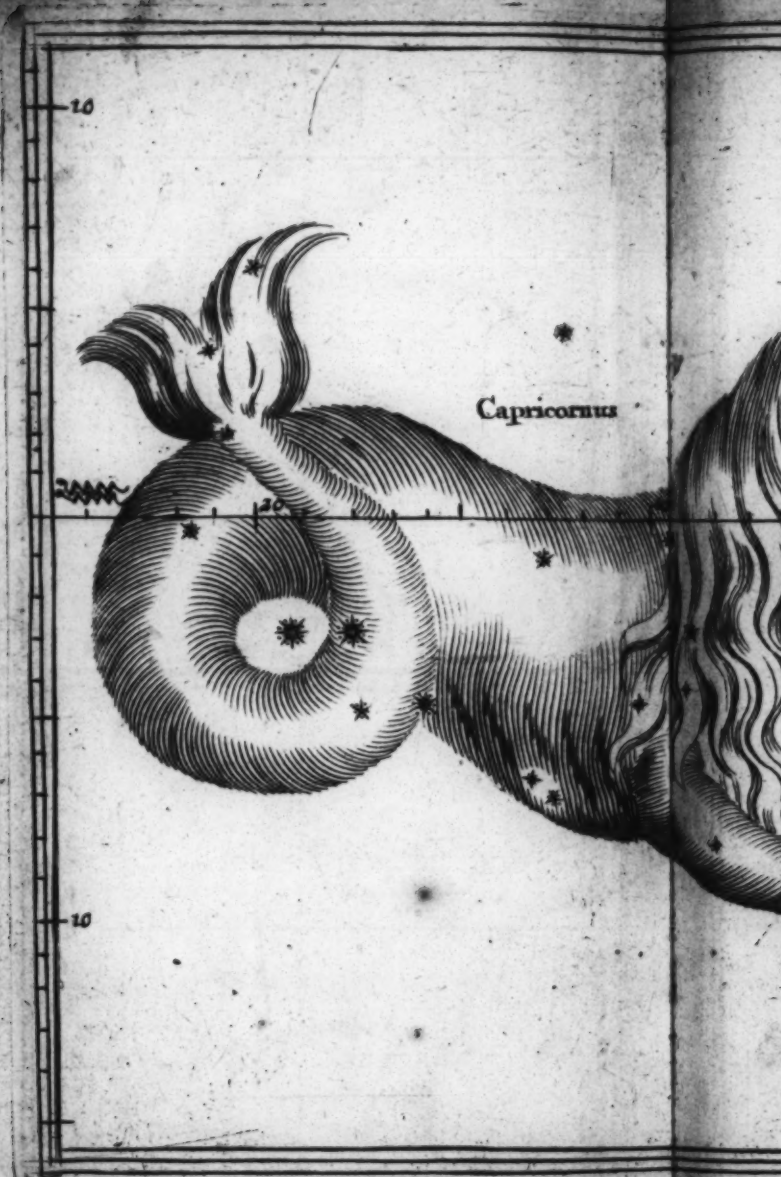












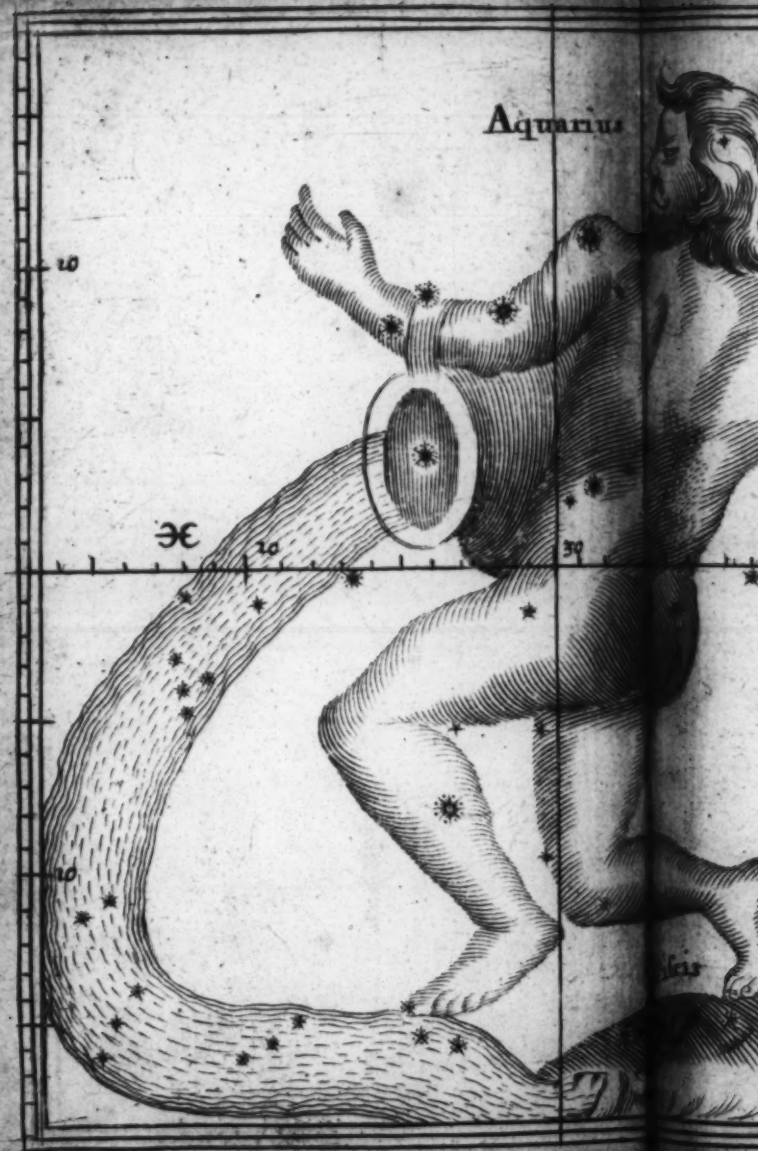








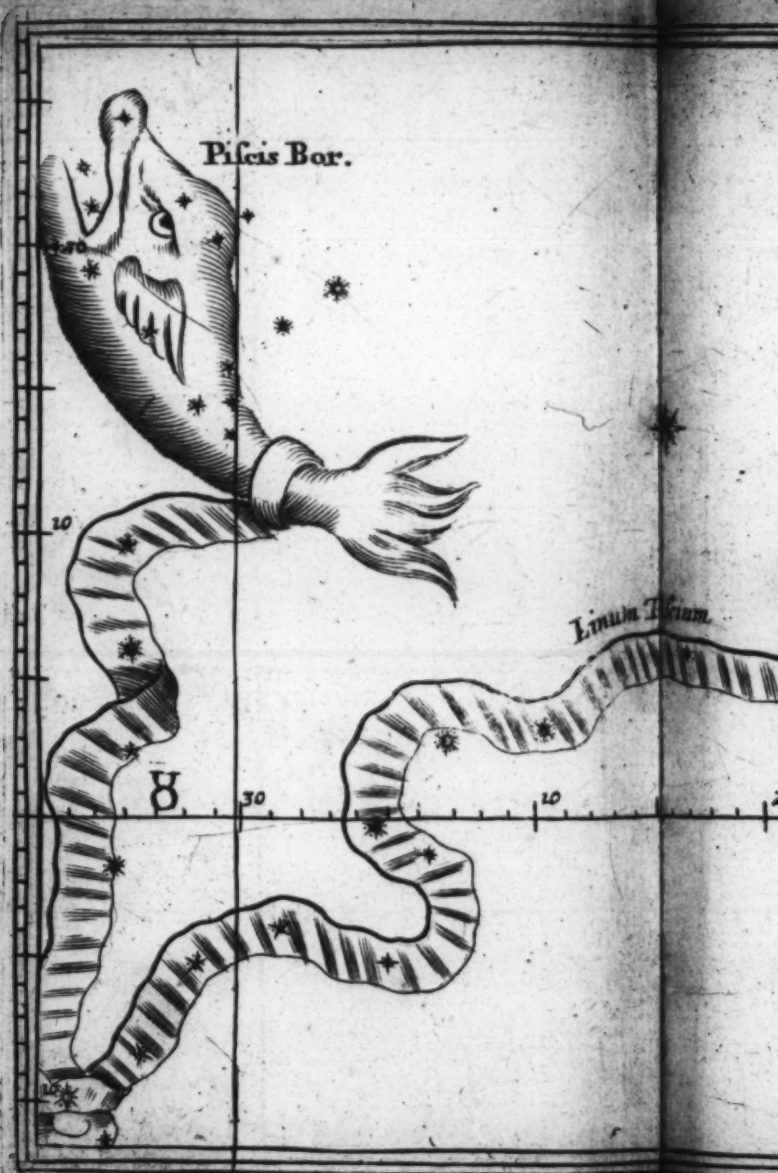
Aquarius











Piscis Bor.

Cancer

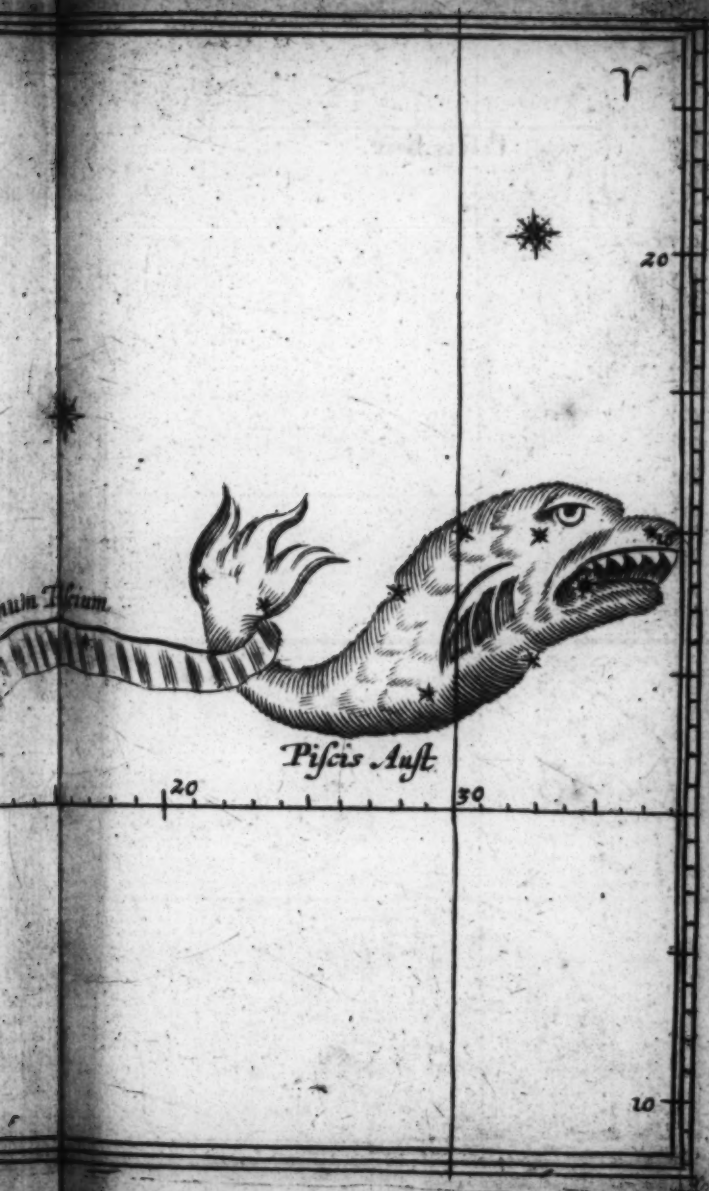
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*Magnitudines Stellarum*

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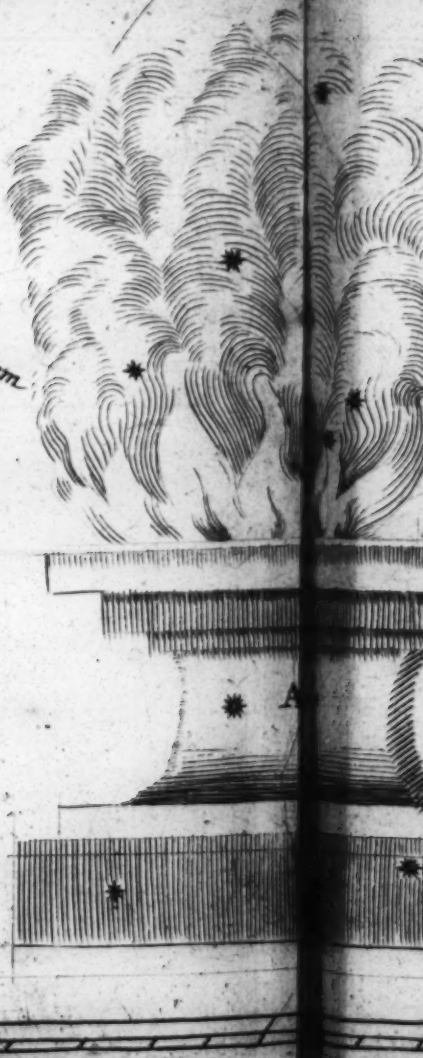
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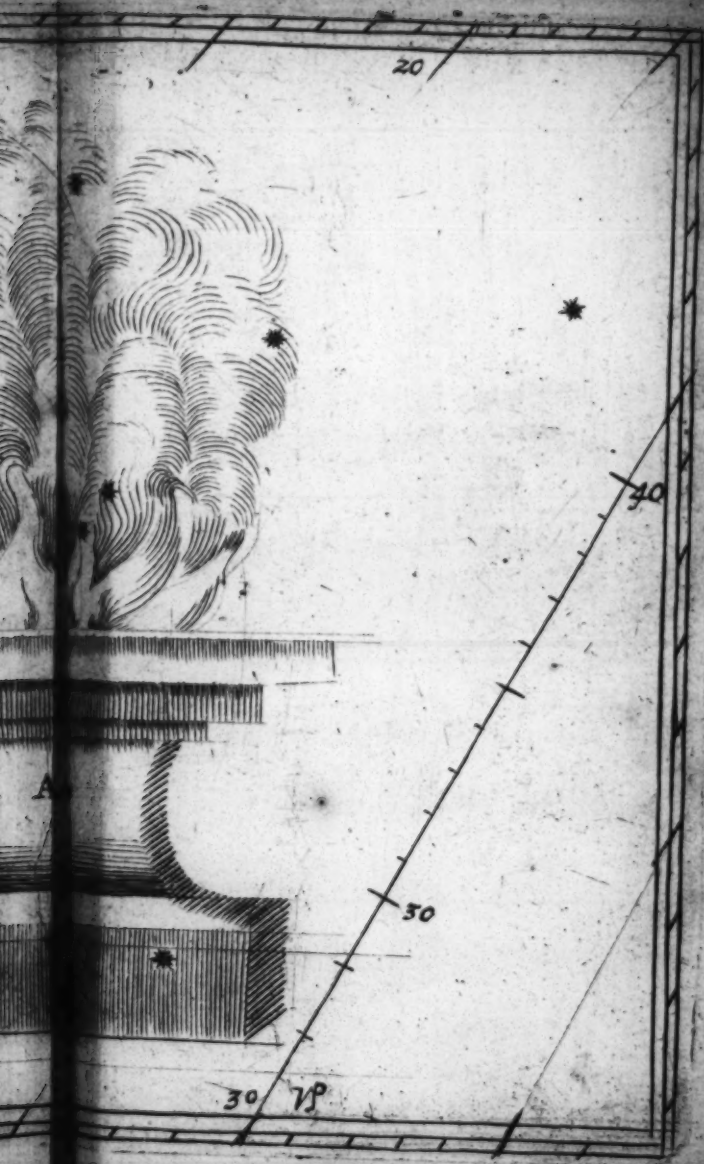
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20

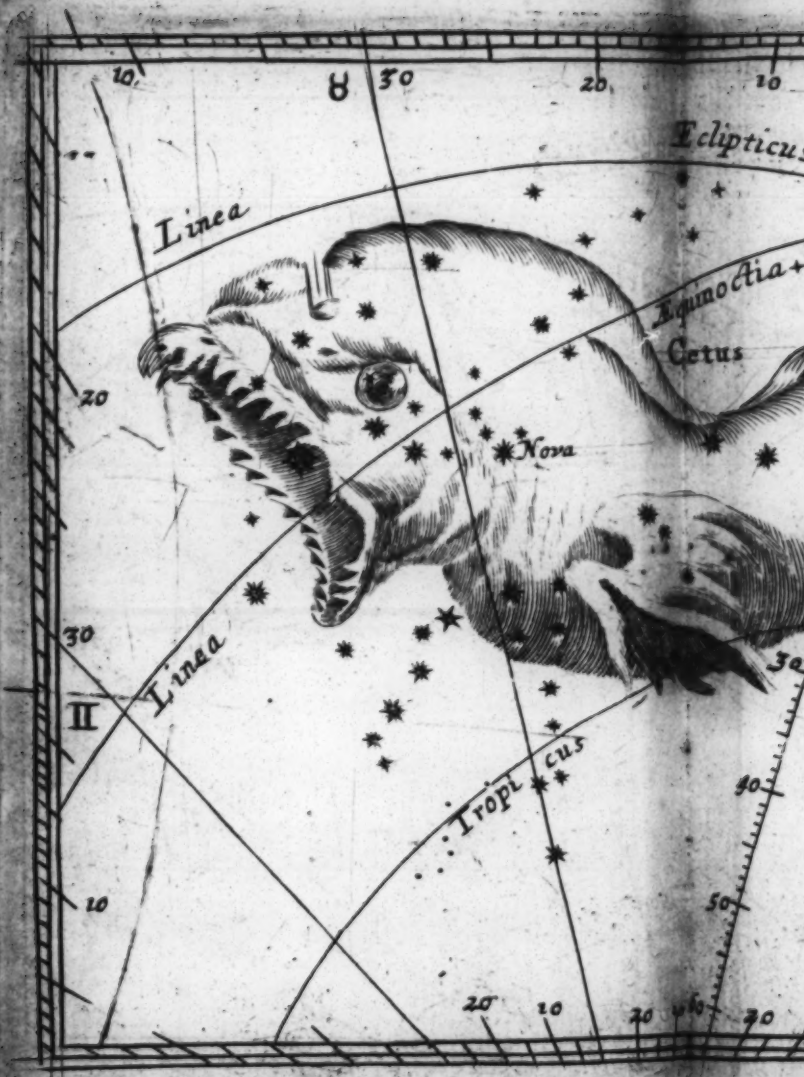
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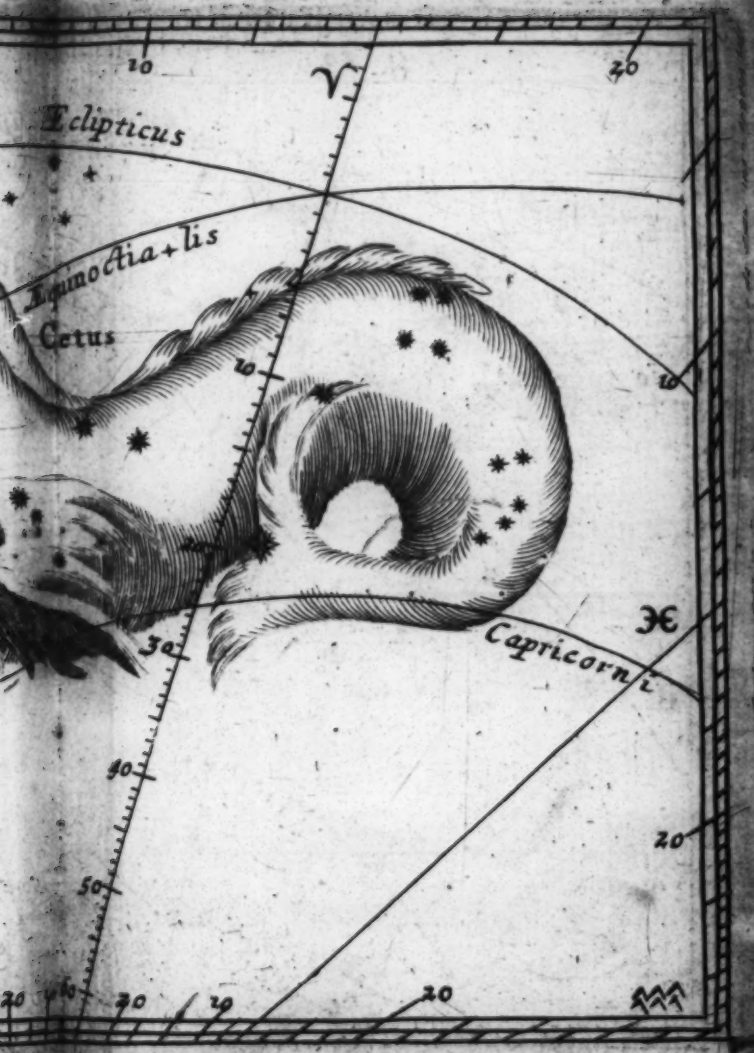






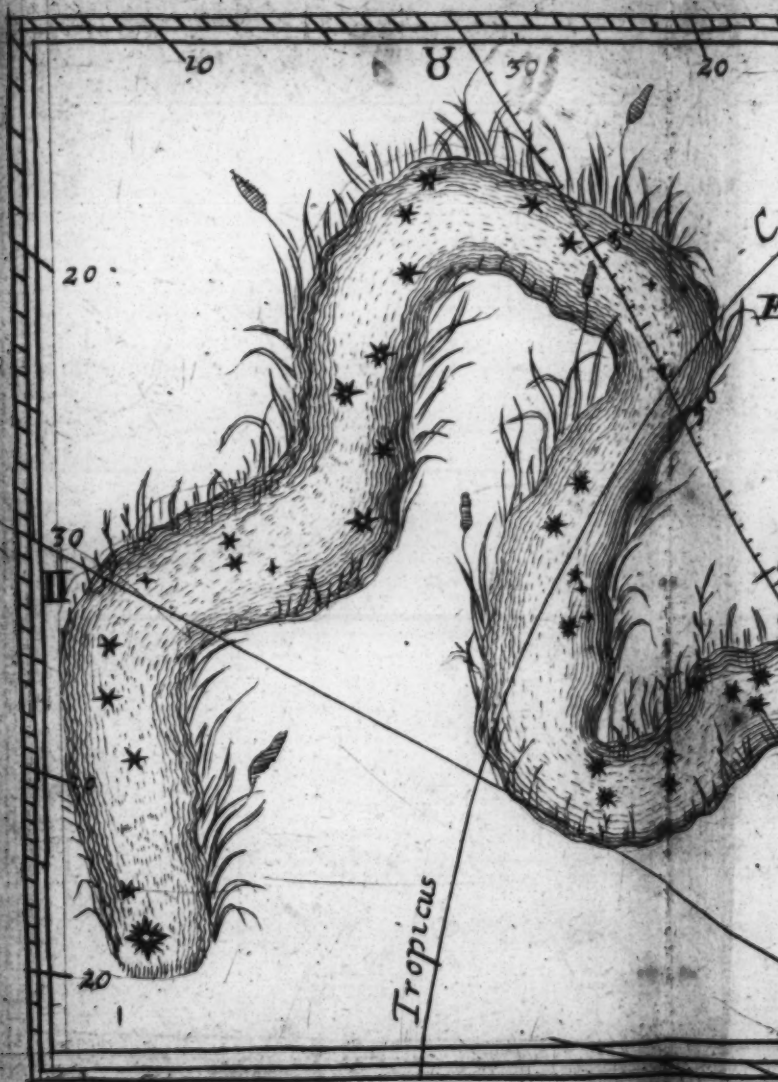










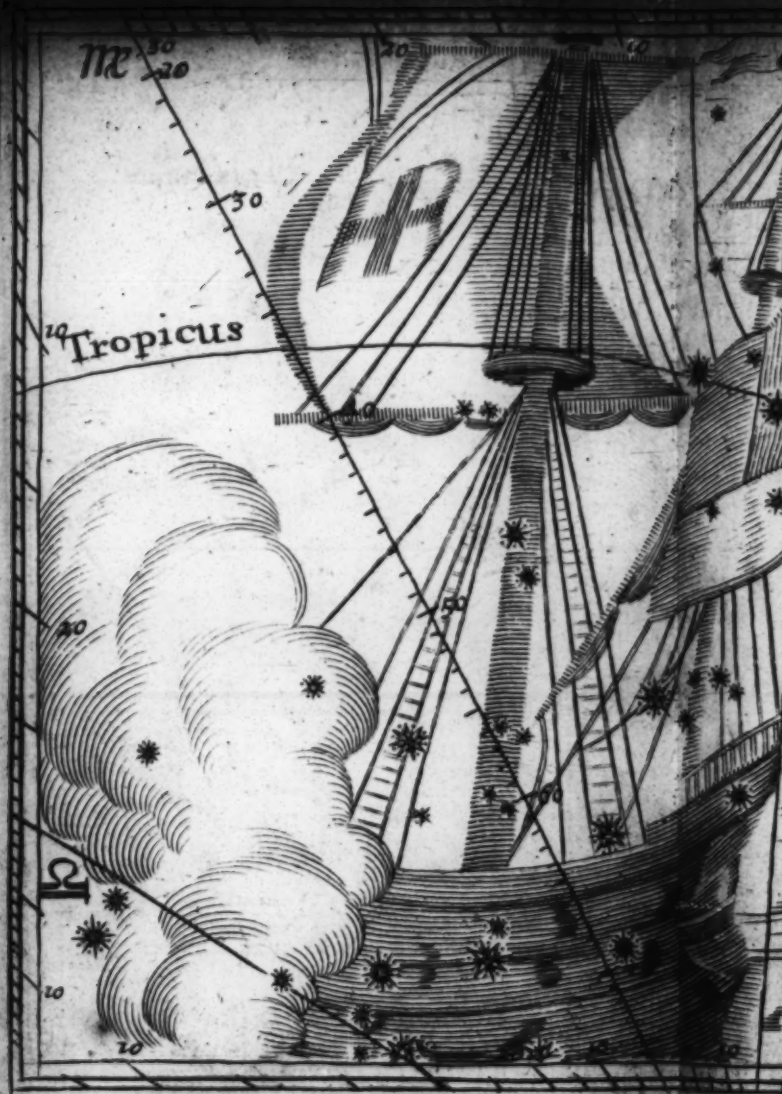








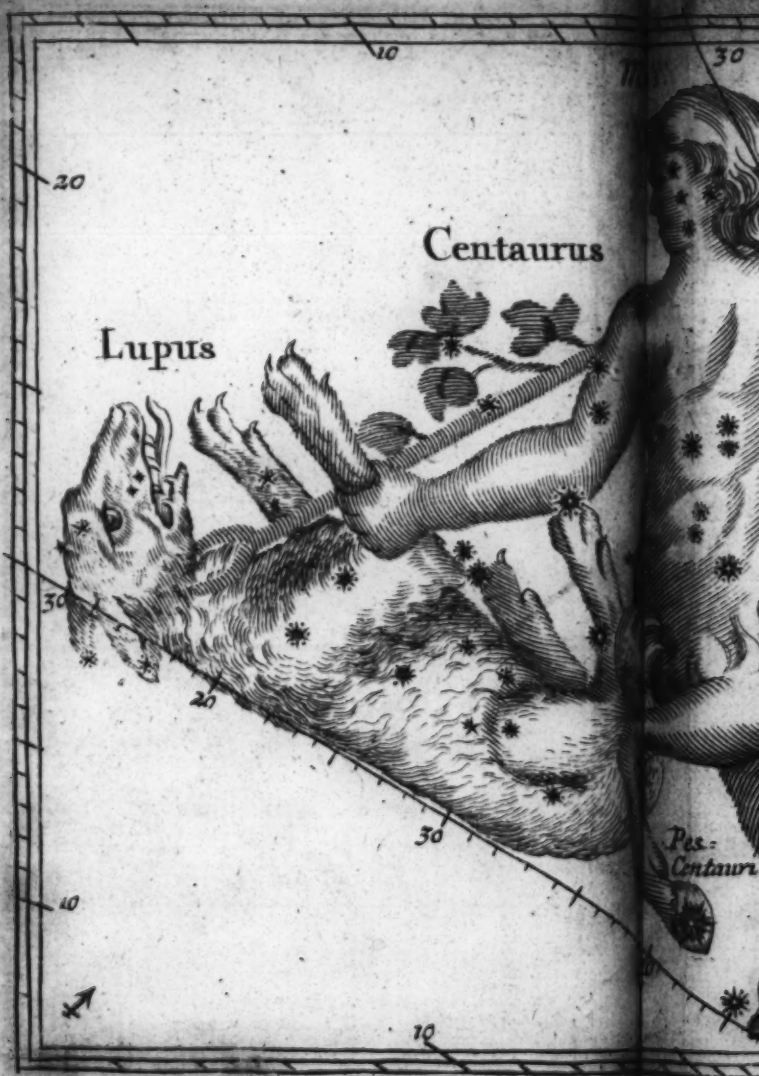










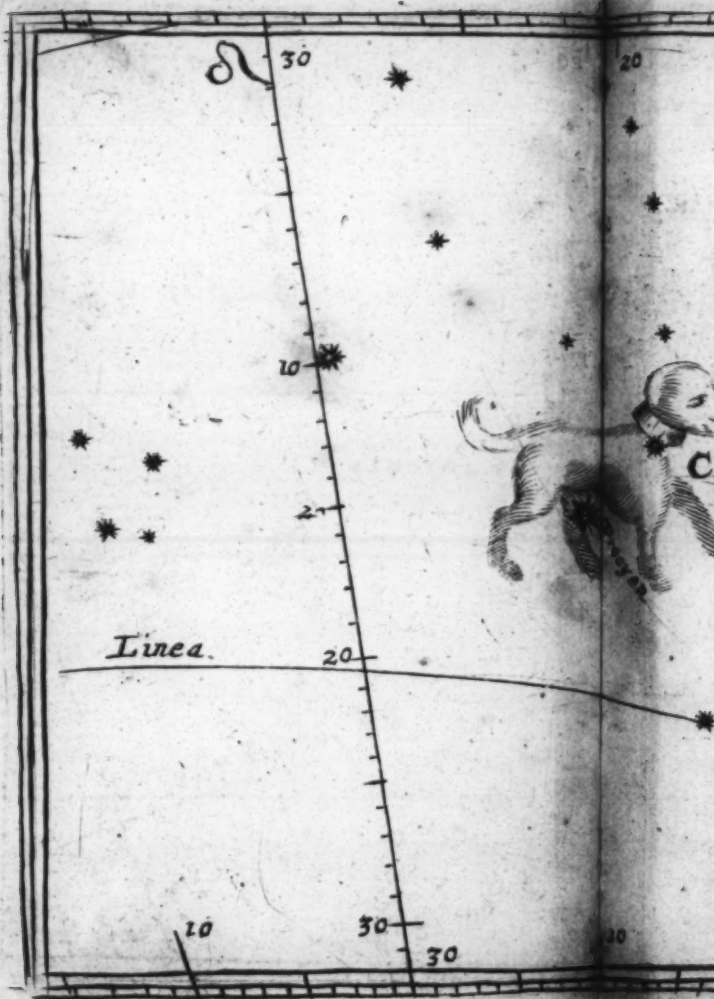


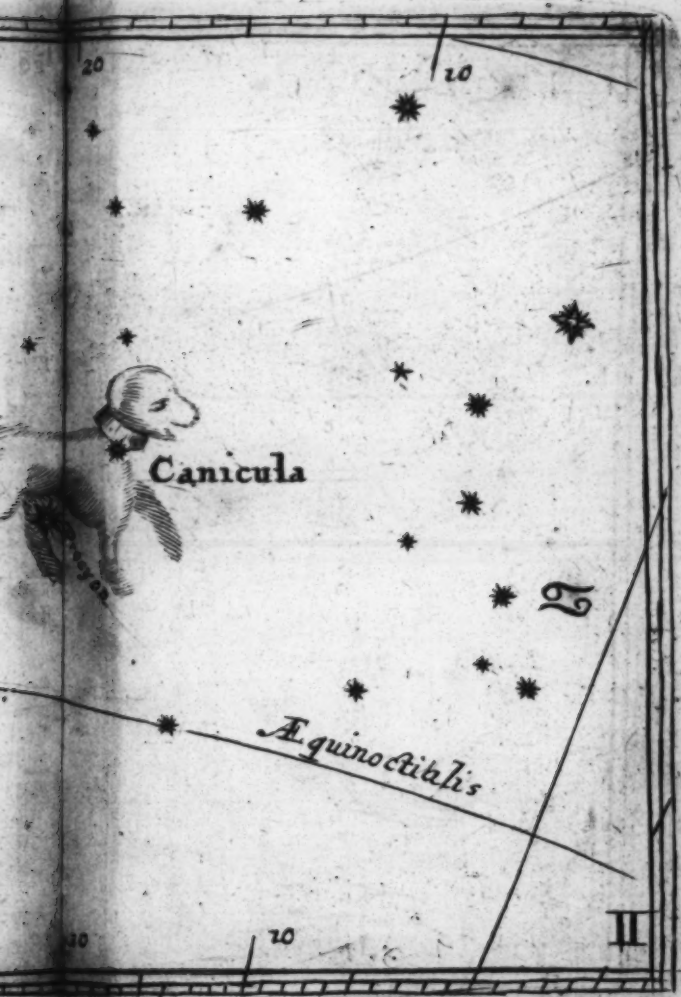






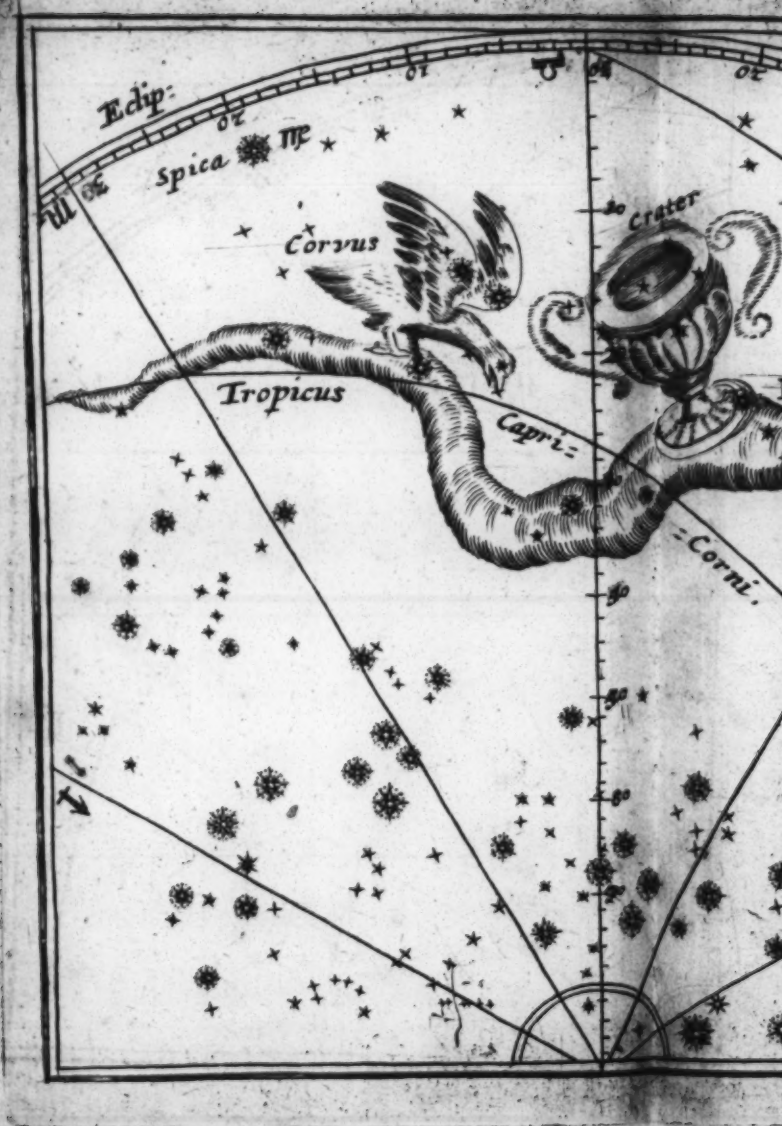








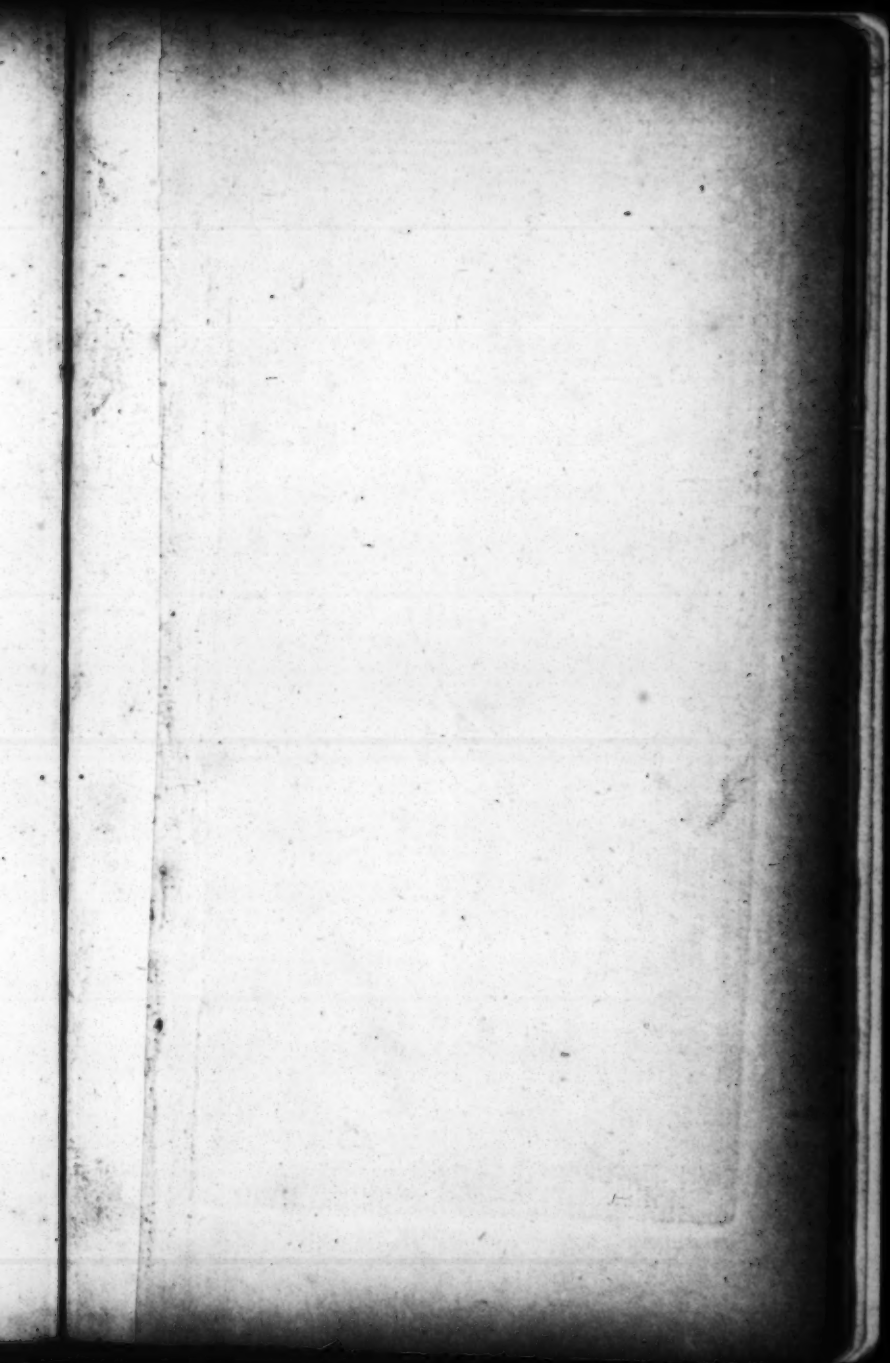








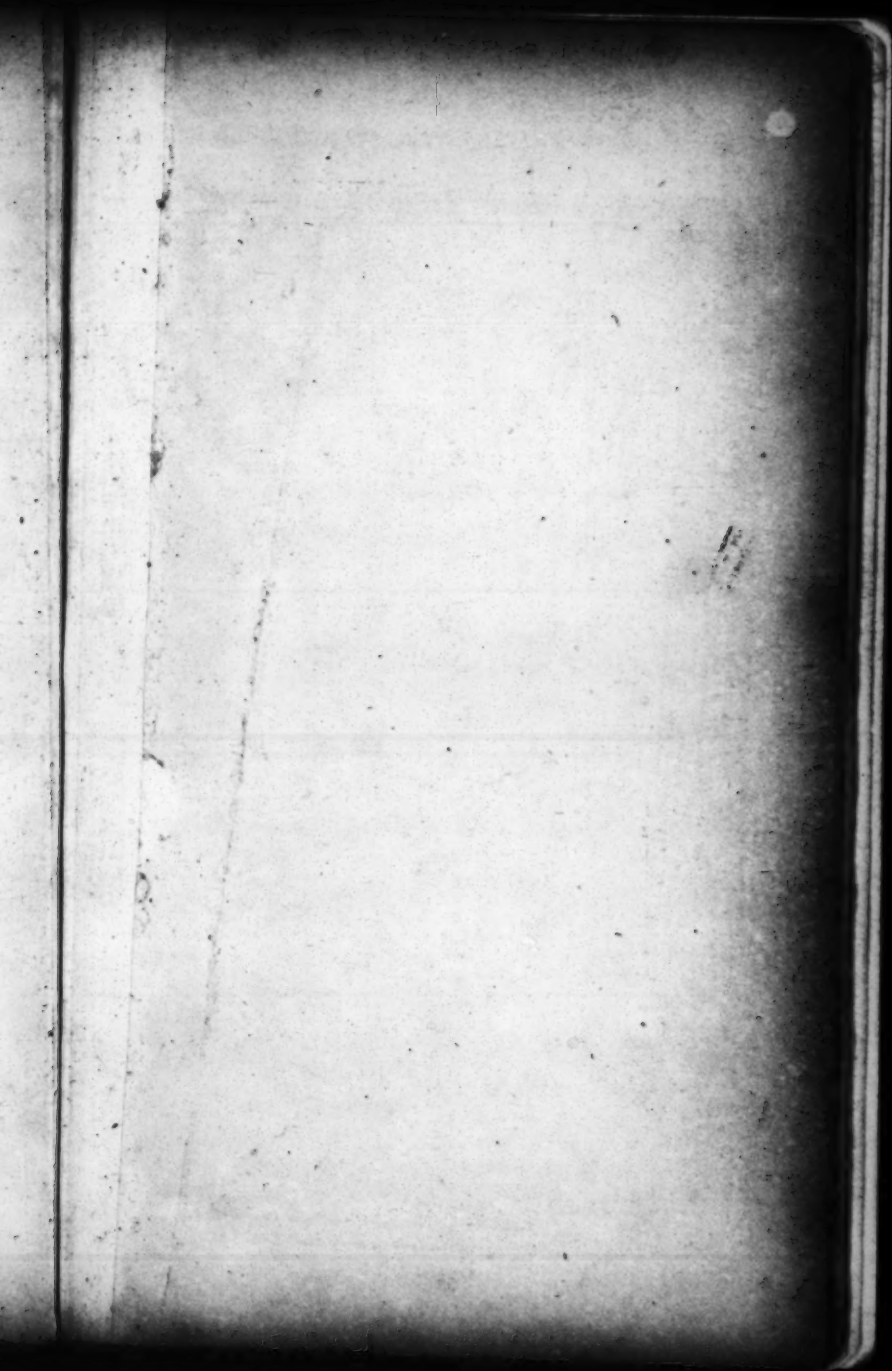












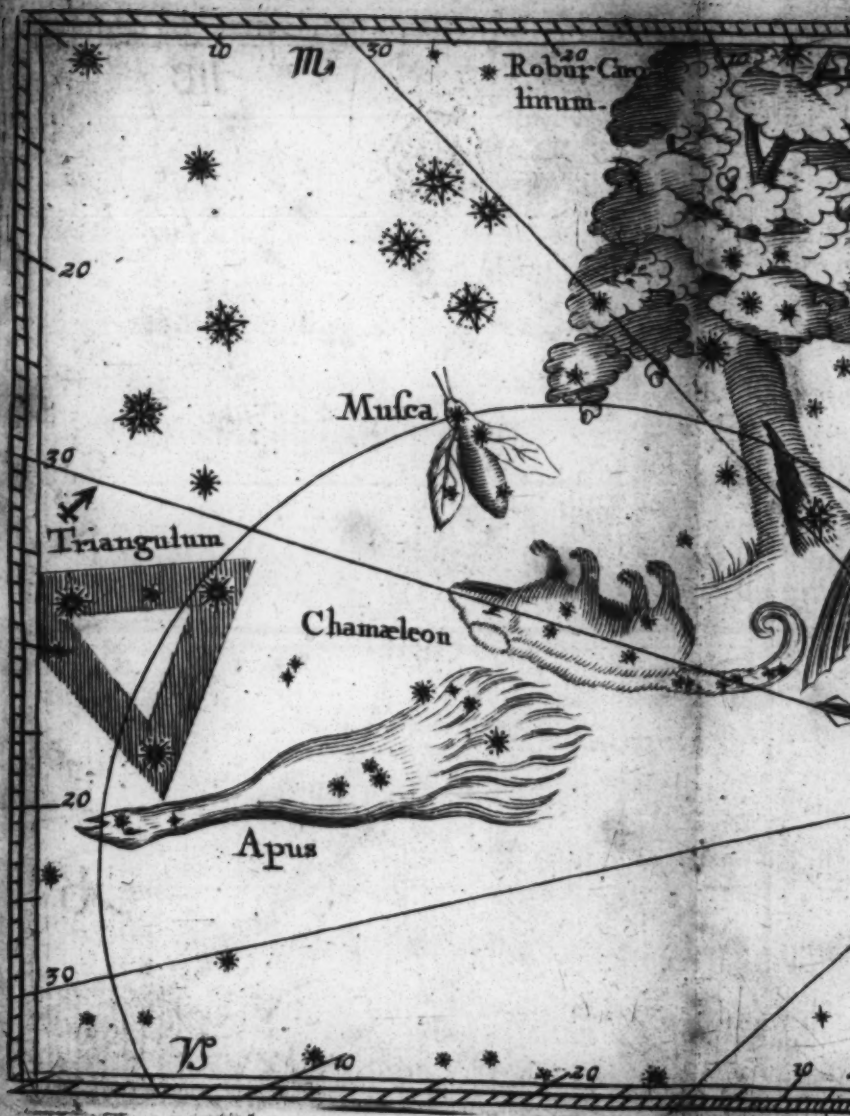


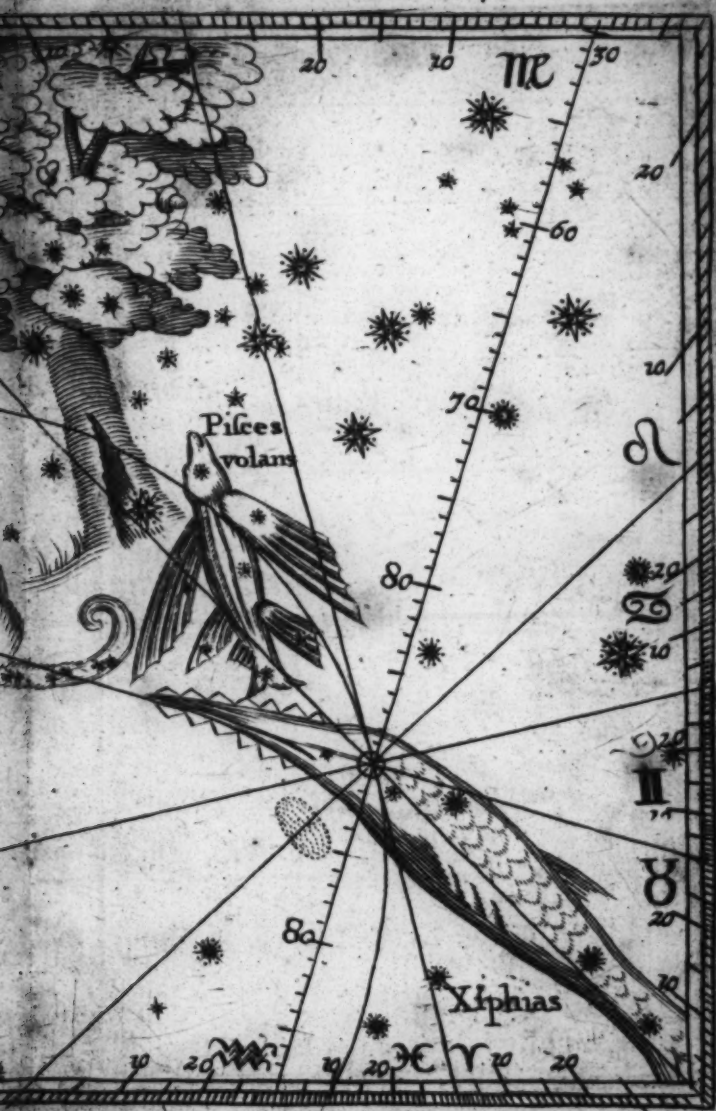


















1835

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1760

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